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PRESIDENTIAL ADDRESS

THE FUTURE OF THE ACADEMY

In reviving the custom of an inaugural address, I have no desire to instruct my betters. My state of mind is beautifully set forth in the opening sentences of the earliest communication presented to this society when, in 1780, Governor James Bowdoin, our first president, said: "When I consider, that among the members of the Academy there are gentlemen of abilities superior to my own, especially in the walks of philosophy, I feel a consciousness, that its honours might in one instance have been better placed. But if a defect of abilities could be compensated by a good will to serve its interest, and promote the end of its institution, I should have the satisfaction to think myself not wholly unqualified for the station, with which your suffrages have honoured me." Indeed, if any incoming president were inclined to be pretentious or puffed up, a glance at the names of his predecessors ought to deflate an over-extended ego. Bowdoin, Holyoke, Bowditch, three members of the Adams family, James Jackson, Pickering, Bigelow, Asa Gray—these names adorn the first century of our corporate existence; and if he turns to later and living predecessors, he cannot be comforted. There is a tale concerning John Adams, second president both of this body and of the United States, which is pertinent. When Mr. Adams went to London as American minister, George III, who did not like rebels, said to him acidly: "You succeed Dr. Franklin, do you not?" "No, sir" replied the diplomat, "I do not succeed Dr. Franklin; I merely follow him." I do not succeed Harlow Shapley, I merely follow him.

I have chosen to speak of the present status and possible future of the American Academy of Arts and Sciences. I have consulted nobody, and must bear the sole responsibility for any suggestions I shall make. If these suggestions are dismissed as proceeding from the valor of ignorance, I shall not complain. Many of the problems before an institution like this are perennial, and the only novelty in successive decades is the varying emphasis with which they press upon us for solution. Much that I shall say has probably been better said before. But I shall be content if my remarks awaken in my fellow academicians a sense of our present need for taking stock of the Academy, of ourselves, and of our individual relations to the corporate aim. I have scarcely met with the administrative officers of the Academy, so new am I to this office, but I believe it to be true that neither the President, nor the Council, nor the whole administrative body of the organization taken together, can work out a destiny worthy of our pretensions, unless the lively and continuing interest of a great majority of the fellows is awakened. Disagree with me if you will and denounce me if you must. But if I succeed in arousing debate over the general program of this historic institution I shall have achieved my purpose.

In a period when most educational institutions and many learned societies are taking stock, we, too, can afford to speculate. But if we are to know what we are and whither we are moving, we ought to remember how we came into being and what we have been. The problems of a society like ours are in large measure the result of history. It is therefore wise to glance briefly at the history of academies. That history falls into three grand divisions. In the first of these, academies came into being. In the second, they developed in certain important directions. In the third, they lost ground. These three stages roughly correspond to the seventeenth, eighteenth, and nineteenth centuries.

Following the release of intellectual and cultural forces in the Renaissance, forces which eventuated as humanism or the New Learning, and the new science or Natural Philosophy, it is commonplace that in seventeenth-century Europe, leaders of what was then a radical reinterpretation of man and nature felt the need of mutual support and criticism, and that out of this need such institutions as the French Academy and the Royal Society were born. From their great example we descend. It is again a common-

place that one of the principal issues leading to the creation of these bodies was the necessity of finding or creating a language common to the new dispensation, more accurate than literary language, and better shaped for the purpose than was the technical vocabulary of scholasticism. Much of the theorizing which preceded or accompanied the creation of academies concerned this problem of word and meaning; much of the writing of Bacon, Descartes, and others concerned the problem of communication. They sought an instrument of language which should be at once rational, perspicuous, uncolored by personal emotion, and unperplexed by rhetorical adornment. Their assumption was that all parts of knowledge were equally accessible to any educated person, and that the reporting of experiment and discovery in simple, rational and perspicuous words would render the results intelligible to all who participated in the style. In sum, the kingdom of knowledge was indivisible, its language universal. Membership in the Royal Academy was therefore equally open to poet and scientist, who shared without embarrassment in its discussions.

In the eighteenth century another great addition was made. Specialization in certain fields—for example, chemistry and physics—had increased, and some differentiation of function was necessary. But knowledge was yet sufficiently uncomplicated for a universal genius like Franklin to follow where Bacon, Descartes, Leibnitz and Newton had led, and to contribute to a dozen fields, scientific papers that are models of exactitude in language that is simple and plain. As there seemed to be no reason why this situation should not continue, Franklin founded the first American learned society, with a particular ideal in mind. Not research for its own sake, but research for social ends was the formal purpose of the American Philosophical Society held at Philadelphia for Promoting Useful Knowledge. The test of utility was social applicability. In striking contrast to the Renaissance doctrine that knowledge was a secret to be shared by the uninitiated only, the public diffusion of knowledge had now become a virtue.

This spirit presided over the creation of the American Academy of Arts and Sciences. If we turn to the preface to the first volume of our *Memoirs*, published in 1785, we read: "Societies for promoting useful knowledge may be highly advantageous to the communities in which they are instituted. Men united together, and frequently meeting for the purpose of advancing the sciences, the arts, agriculture, manufactures and commerce, may oftentimes suggest such hints to one another, as may be improved to important ends; and such societies, by being the repositories of the observations and discoveries of the learned and ingenious, may, from time to time, furnish the world with useful publications, which might otherwise be lost . . . Societies instituted for promoting knowledge, may also be of eminent service, by exciting a spirit of emulation, and enkindling those sparks of genius, which otherwise might forever have been concealed; and if, when possessed of funds sufficient for the purpose, they reward the exertions of the industrious and enterprising, with pecuniary premiums or honorary medals, many important experiments and useful discoveries will be made, from which, the public may reap the highest advantages."

This paragraph suggests that, the notion of social usefulness being granted, two important corollaries were drawn by the founding fathers. One was that the learned are under some obligation to hunt out and develop potential talent, and hence it is that academies established competitive prizes such as that, the winning of which first drew public attention to Rousseau. The second was that the proceedings of academies should be a public matter. In the seventeenth century learned men often communicated with each other by letter. Afterwards, the transactions of academies were published. The eighteenth century tended to transform these publications into periodicals which were important vehicles for the diffusion of knowledge to the enlightenment. Such periodicals served the eighteenth century for a variety of functions we have since differentiated, and were, in our terms, reports upon research and discovery, university monographs, extension lectures, correspondence courses, and technical trade journals. Because the fields of learning were still relatively close together, even when a mildly specialized magazine like *The American Journal of Science* was founded, under the shadow of academy practice it took all natural philosophy for its province.

And because universities were not yet what they have become, because industry was still simple, because research foundations were undreamed of, the academy remained a dynamic center for the intellectual world.

If the eighteenth century saw academies at their highest pitch of usefulness, the nineteenth saw their relative decline. The reasons are well known. The most obvious was the increasing differentiation of knowledge, the opening of vast new fields of research, the invention of new specialisms, and the development of unique technological vocabularies. The second was that government took over many of the functions originally developed by academies. The third was the development of the modern research university. The fourth was the creation of the independent research center, industrial laboratory, teaching museum, institute of advanced studies, or other endowed project for the advanced specialist. The fifth was the establishment of gigantic foundations like the Guggenheim Foundation, to search out and support younger research workers or to reward them with prizes and fellowships on a scale beyond the resources of academies.

As a consequence, the academy lost ground. Because specialization of knowledge was accompanied by specialization of vocabulary, one of the first results was to drive the scientist and the humanist apart, so that in the case of our own organization (as an example) humanists tend to stay away from a scientific communication on the ground that they connot understand it. A minor, but unfortunate, result, has been that scholars in the arts have set enthusiastically to work to become as linguistically complicated as the scientists, thus insuring that the scientists could not understand *them*. Eventually, of course, scientists were driven apart from each other.

A second, and more fundamental, change occurred when (the old, undifferentiated academy meeting proving unsatisfactory to the new specialisms), the century developed the greatest number of professional associations the world has ever known. These in turn increased by fissure into still more specialized organizations, so that, to take a simple case, we have not merely the American Historical Association, but within that society or associated with it, groups like the Catholic Historical Society, the Mississippi Valley Historical Society, a group in agricultural history, a group in local history, a group in military history, and so forth. And precisely as the undifferentiated academy meeting proved unsatisfactory, so undifferentiated publications proved also unsatisfactory, and academy publications must now therefore compete with technical and professional journals so infinite in number as to reduce librarians to despair.

The rise of the modern research university has further narrowed our field. It has not merely created, in laboratory and library, centers of personal contact among research workers far more useful than an academy building can hope to be, but it has also given us attractive training centers for young men. Graduate fellowships are a more satisfactory method of encouraging young talent than random academy prizes can become. Moreover, the publication of dissertations, monographs, and books of greater magnitude, at university expense removes from academy lists titles that might otherwise be there, and throws academy publication into competition of the severest sort. Finally, but in the long run most importantly, the universities have developed techniques of begging gifts from the wealthy that leave the simple-minded academician gasping in the rear.

The competition of government bureaus is equally interesting. The early years of the American Philosophical Society and of this academy saw its members writing papers about the weather, tides, weights and measures, geology, mastodons and other topics that, one by one, became the professional province of the Weather Bureau, the Coast and Geodetic Survey, the Bureau of Standards, the Smithsonian Institute and other parts of the national government. These agencies can accomplish cooperatively what, with all their genius, individuals like Franklin and Jefferson could not achieve. Government bureaus are subsidized by public money, the academy is not; and by definition they take over from the academy a role of public service and public education that was one of the original aims of our institution. To be sure, distinguished members of the government services become members of the academies, but this is not the same thing as assuming that the primary aim of an academy is the public service. Finally, of course,

government publication competes with academy publication.

Modern industrial research has further complicated our survival problem. Not to speak of the vast equipment ready for the research worker in industrial laboratories, and of the money which can be placed at the disposal of such a laboratory, once it has struck a promising lead, the ambivalent attitude of large corporations towards the results of research they have subsidized must be reckoned with. Some corporations are conspicuous for their sense of civic responsibility; others, it is notorious, buy up brains and hoard discoveries. This latter practice exactly contradicts the generous eighteenth-century belief that the diffusion of rational knowledge is the highest ethical obligation upon the expert; and where the practice of monopolizing research exists, it marks the failure of academies to convert the nation to a right philosophy. More important, however, is the fact that if industry finds it profitable to subsidize its own laboratories, it is not going to donate money to academies except upon terms that are agreeable to industry, and such donations, when they come, are more likely to be for specific projects than for the general public weal.

It would be tedious to rehearse the tale of other agencies which have innocently weakened the influencies of academies. Textbook publishers are a single instance. Nor should it be assumed that academies are obsolescent. In an age of big money, when an ancient institution like the American Philosophical Society is given a large bequest, it wonderfully renews its youth. But if one looks at the general history of academies hopefully founded during the last two centuries, two observations will occur. The first is that many of these, especially those limited to a state or region, have been absorbed by some nearby university as an extramural outlet for research papers, or have become social bodies. The second is a tendency to make election something between an honorary degree and retirement, a recognition of things accomplished rather than a spur to greater things. This danger was recognized by our academy in 1921 when a special committee wisely reported: ". . . it is the duty of the Academy, and its privilege, to encourage work in the Arts and Sciences and to be, through its meetings, a center for getting together once a month a large number of persons interested in learning here in Boston. Reasonably prompt election of young men in this vicinity will aid in the accomplishment of both these purposes. We believe, however, that no one should be elected to the Academy who has not in his own name and by his own determination, already given good evidence, through his publications, of accomplishment, and further evidence of the promise of accomplishment in the future." Because war conditions have taken many younger men away from us, it is perhaps well to recur to the sound advice of the committee and to remember that the reasonably prompt election of young men in this vicinity is one of the most important guarantees that we shall not become senescent.

No one can say, I think, that in 1900 academies were as important in the total intellectual life of a nation as they had been in 1800 or in 1700. All the forces leading to the fractation of knowledge have been more vigorously operative in the last forty years than ever before. Nevertheless two developments in the twentieth century have indicated an opposite trend. In some sense specialism has defeated itself. That is to say, what once looked like a separate compartment of knowledge, unique and apart from everything else, the more it is explored, the more its boundary lines seem to waver and vanish. The relation of fields is not that of pigeon-holes, but of living, interdependent cells. The historian depends upon the anthropologist, the anthropologist upon the sociologist, the sociologist upon the psychologist, the psychologist upon the biologist, the biologist upon the chemist, the chemist upon the physicist, the physicist upon the mathematician, and so on in an endless circle. It is hard to know whether a given problem lies in chemical physics or physical chemistry. I am supposed to be a literary critic, but I seem to spend most of my time with the historians. In certain advanced areas it is difficult to know whether one is confronting mathematics or theology. The area and language programs of the Army have fused into a common purpose a dozen so-called "disciplines." These random examples show how the very multiplication of specialities has forced the specialists to come together, to exchange ideas, to study each other's techniques, even—what is anathema to the old-fashioned, hard-boiled,

realistic investigator—to discuss the philosophy of what they are doing.

And a second pressure towards unity has come from the outside. Students of Western culture have freely said that if we do not recover a common set of ideas, a common tradition, and a common language, we are lost. The wheel has come full circle, but on another plane; and just as men sought in the seventeenth century a means of communicating with each other that would permit the easy flow of generalized ideas, so we, too, perhaps face the same necessity. Certain it is that in any meeting convoked to discuss the state of culture or of education, it is common to lament that knowledge is specialized, to compare its fractation unfavorably with the medieval synthesis or with classical unity, and to demand that we retrace our steps or learn some new mode of common speech.

Much of this appeal, to be sure, is specious. Much of its springs from a nostalgia after a perfect past that never was. Neither classical culture nor the medieval world embraced a fraction of the human beings alive under either dispensation, and the middle ages were not so synthesized nor classical minds so harmonious as this argument seems to imply. Nevertheless, it is an argument of weight, and the question is only: what knowledge is to be intercommunicated, and where can this intercommunication best take place? Let me glance at these problems in reverse order.

Government and industry aside, there are, it seems to me, three sorts of institutions in which specialists might talk to each other, and to some extent do so perform: universities; specially called congresses; and academies. The universities seem at first sight favorable places. None but has its committee on curricular reform. This reform takes the direction of something called "broad" courses, intended to synthesize knowledge for the young, and presumably indicates that their elders feel the need for synthesis. But the confusion of that which is broadening with that which is broad, has never been cleared up by the reformers, and it is amusing to note that this movement mostly creates a new type of educational specialist, the synthesizer. On the whole, moreover, this movement does not affect the mature work of the university, which is that of graduate training and of research. The creation of specialists *is* the professional purpose of universities, and should not be altered. Therefore, laudable though the aim of the reform may be, it seems unlikely that university faculties, to whom research is the principal reward of their intellectual being, will cease to be specialists. But as specialists will they seek to communicate with each other? Yes and no, but I think "No" rather more than "Yes." What stands in the way of organic change is the economic structure of the American university. The basic unit of faculty organization is the department; and however we may pretend that a department is only a committee of the faculty, the truth is, of course, that departments are in grim financial competition with each other, engaging in a kind of *bellum omnium in omnes* for salaries, research funds, promotions, appointments, and endowment. In a universe of experts the unspecialized goes to the wall. The specialist cannot desert the professional flag, and must, *ex hypothesi*, stick pretty well to his department.

The next possibility is the special congress, of the type of the Conference on Science, Philosophy and Religion annually convoked at Columbia University. That these yearly meetings accomplish something in cross-fertilization and cross-simplification is probably true, but in the nature of the case their influence is intermittent and appeals only to the people to whom it appeals. Moreover, these congresses sometimes produce effects the opposite of what they intend. Their search for a common language leads to the creation of elaborate verbal structures that, in seeking accuracy, achieve a new complexity, and this search for absolute definitions throws emphasis upon techniques and procedures rather than upon ideational content. Their second weakness is an inevitable tendency towards evangelicism, which is socially laudable but not the same thing as using a language common to all disciplines. Let us not forget that one of the aftermaths of the International Congress of Religions at the World's Columbian Exposition was an increase in the number of sects.

An academy, however, is free from the internecine warfare of the departments and is a more stable body than the annual congress. There being no problems of promotion or salary increase

to disturb our republican simplicity, we ought to be an institution in which specialists can relax; and as we are committed to serve, but not to remake, the body politic, our processes can be ideological rather than passionate. Nevertheless, our usefulness is also severely limited, and unless we are prepared courageously to face these limitations, we may yet join other venerable Boston organizations of historical importance only. If this be treason, make the most of it.

In shaping this academy our predecessors recognized even in simpler times the differentiation of knowledge, by establishing the several classes and divisions of our membership. Yet, except as a device for maintaining balance in electing new fellows and except for fulfilling certain constitutional provisions, the academy seems not to recognize the problem set by its own organization. Our aims are contradictory. On the one hand, our monthly "communications," operating on eighteenth-century postulates, are supposed to be couched in such language that all sensible men can understand them. On the other hand, we exist for the advance of knowledge in the several fields represented by our sub-sections, the heritage of the nineteenth century. If a fellow presents the results of research in his specialty, it is possible that only members of his own class and subsections will fully comprehend him; yet if his research is to receive competent criticism by the academy, he ought not abate one whit of its intricacies, albeit in proportion as he is accurate and detailed, his audience will necessarily diminish. On the other hand, if members address the general meeting, as they do, they cannot hope to present specialized problems without simplification, thereby running the double risk of wearying the competent and of talking down to the uninitiated. Good sense, to be sure, gets many a speaker around this difficulty, and the very challenge of the occasion sometimes compels a useful clarification. Nevertheless, here is a difficulty which severely limits the program committees in its choice of speakers and of topics. It is also a difficulty which leads to eccentric results in the size and character of academy audiences.

But what most troubles me is not these pragmatic considerations, but the begging of the question of the relation of the academy to research. I do not believe we exist for the amiable exchange of lectures. I thing our primary duty is still that of our charter, which is "to promote and encourage . . . knowledge . . . and . . . to cultivate every art and science, which may tend to advance the interest, honor, dignity and happiness of a free, independent, and virtuous people." As I understand this language, it says that the cultivation of our several departments of work is the primary duty of the Academy, which, by bringing mature men and women together in their several fields, seeks to encourage their investigations. So far as we are under any obligation to inform the general public about what is going on in our separate specialties,—and that it is a duty I grant—that duty nevertheless seems to me secondary to our principal purpose—our directive, in modern lingo. But I am frank to say our meetings do not always carry out that principal purpose. I am by no means clear that our present type of monthly meetings is the sole type of program we can usefully support; and if we have to choose, I think we ought rather to imitate the work of the Institute of Advanced Studies at Princeton than the work of the Lowell lectures, excellent for their purpose though these latter may be. In short, I suggest the time has come to re-study the whole question of the nature, number, and function of our monthly "communications."

But if the encouragement of research is the primary business of the academy, what, it will be asked, becomes of the hunt for a common language? If I raise the question whether the present pattern of our meetings efficiently carries out the original aim and primary purpose of this society, I must not be understood as saying that all our gatherings should be devoted to matters so technical that only a few can comprehend them. I am far from implying that our general meetings should disappear. But they should not be our only type of meetings. I do most firmly believe that the spirit of research at advanced levels rather than the spirit of reporting even at high levels is essential to the healthy life of an academy. I do not see how we can hold the real attention of younger members unless we somehow vigorously implement the statement of the 1921 committee that this academy must be a center of learning in Boston. If we attempt to reduce complex problems of investigation to postulates

so simple that all the members of the Academy will immediately understand them, I do not believe young specialists are going to keep up an eager interest in our meetings. I therefore suggest that to study the problem of differentiating our meetings, to compare our success with that of the American Philosophical Society, which, as most of you know, follows a different plan, to review the purpose and function of these meetings, and, indeed of the Academy as a whole, seems to me primary business of our immediate future.

But I may seem to depart from the notion that academies exist in order that learned men may talk a common language. As I earlier indicated, this call to retreat up the stream of time to simpler eras seems to me specious. I do not believe such a retreat is practicable. I think the problem is wrongly phrased. I should myself put it this way: that our problem is not whether a common language can be artificially reinstituted among learned men, but whether this Academy is not charged with the duty of creating a common climate of opinion. My observation is that the research spirit does not depend upon vocabulary but upon an exciting philosophy of values. In my wanderings over the republic it has seemed to me that those institutions were stimulating, not where the chemists were concerned lest the literary critics could not understand them, but where the chemists and the literary critics were alike committed to an exciting intellectual existence. I think institutions of learning grow or decline, are active or dormant, in proportion as they dare to foster great projects, dream of great issues, and dare to embark upon great and important programs. Will the American Academy of Arts and Sciences rise to the height of the great argument which brought it into being, or will it be content to become simply another Boston institution?

To be sure, we at present offer prizes and subsidize research projects in proportion to our modest means. That is all to the good. If we do not do better, our excuse is: lack of funds. I do not question the utility of our present practice, but it is utility on a lower level. I shall be bold enough to say bluntly that this academy does not now foster enterprises of that magnitude and daring the founding fathers had in mind when they wrote in 1785: "It is the part of a patriotic philosopher to pursue every hint—to cultivate every enquiry, which may eventually tend to the security and welfare of his fellow citizens, the extension of their commerce, and the improvement of those arts, which adorn and embellish life." In an age committed to cooperative enterprise, we who are, or ought to be, the pattern of cooperative enterprise in New England intellectual life must realize our opportunity. We must think largely and generously, not in terms of *ad hoc* projects and parochially. What enterprises can we foster? What is our potential contribution as a corporate body to the life of Boston, of Massachusetts, of New England, of the nation? Dare I say that in any realistic census of the intellectual forces at work in the dominion of New England this academy would not now possess that commanding and central place it ought to have? But we should not be simply another Boston society, we should be *par excellence* the commanding intellectual institution in all the New England states. In place of searching the rolls of colleges and of industry for new members, we should have colleges and industry searching our membership for talent. In place of requesting Dr. X or Professor Y to tell us what is going on in the Massachusetts Institute of Technology or at Washington or in the Museum of Fine Arts, we should have M. I. T. and Washington and the Museum anxiously and hopefully inquiring: what is forward at the American Academy of Arts and Sciences? We have, or had, or should have, a central position in New England culture; is it conceivable that this academy may again become a dynamic center from which lines of intellectual energy shall radiate to all parts of these states and even to the nation at large? I do not believe it is the excitement of the moment that leads me to say that the future before the American Academy is immense, provided the Academy will bestir itself. But it cannot remain passive. It must renew its life. It must announce programs of imaginative daring. It must not indulge that spirit of historical defeatism which a newspaper man has just told me is characteristic of Boston.

It will be said that money and time are lacking, that existing institutions, already heavily endowed, absorb potential funds and monopolize public attention. This is a weak argument. Money never comes to the timid, just as it never

comes to the planless. But if a millionaire came to this building tomorrow to inquire what the Academy had in mind, what could we say to him as a corporate body? No one is going to give to the Academy on the ground that it is vaguely a good thing to support. Only a dynamic program will attract attention to us. And though I would by no means confine the activities of our fellows to any restricted sphere, I am going to crown these audacities by suggesting one form of activity in which the Academy could make itself felt at once.

Boston, Massachusetts, and New England face difficult years, and so far as I can discover, no single body is at work to study the problems immediately ahead. To be specific: we do not know what to do with or for the Port of Boston. We do not know how to relieve the racial and religious tensions among us. We do not know what to do with the apparently moribund agrarian economy of New England. We do not know whether our industries can continue as they have been. We do not know precisely what our natural resources as a region are. If this meeting were held in Chapel Hill, North Carolina, it would be unnecessary for me to say that a survey and a study of the problems of the region at our doors is a primary obligation upon a learned body of disinterested men living in that region. As it is, I suggest that if, after mature consideration of these possibilities, the American Academy of Arts and Sciences were to announce in the public prints that it proposed to embark upon a generous and long-range study of these, and allied, problems, making public the findings of expert members of its body and having no further ax to grind than that of fulfilling the injunction of its founders to bring such information to bear upon our social life as may eventually tend to the security and welfare of our fellow citizens—I say, if the Academy, after mature deliberation, should announce this as one of its present aims (but by no means the only one) I am convinced the tonic effect upon the Fellows and upon the region in which we live would be immense. I venture to prophesy that money and means could be found. I venture to suggest, in fact, that we may even be under some obligation not to stand passive when the economic, the social, and the intellectual life of the commonwealth needs study and support.

Such a project might revolutionize some of our activities, but I do not say that it should revolutionize all of them. I do not argue that our astronomical Fellows should calculate the orbit of the next comet only with reference to Newbury Street. But I feel profoundly that the American Academy of Arts and Sciences is one of the great enterprises descending from the eighteenth century, and I am deeply concerned that it should fulfill the measure of its greatness. I think it should have a place in the life of this commonwealth comparable to that of the Boston Symphony Orchestra, the Massachusetts General Hospital, or the great colleges, institutes and universities round about, which it would be invidious to particularize. I am concerned lest we shall be without vision. I am uneasy lest we break into disparate entities and fail of common purpose. I should like to see us launch greatly upon great enterprises. Unfortunately neither a scientist nor a social scientist, I cannot sketch a specific program of action, but I most earnestly hope these suggestions will be taken up by Fellows competent, as I am not, to translate them into action.

I believe we should create a specially appointed commission of Fellows of the Academy to review and re-examine the whole structure of this ancient institution. Without prejudice to the admirable work of the Council, the Secretaries, and the standing committees, I think this commission should be a special and independent body, having (within the limits of our treasury) funds at its disposal to implement its study, by travel, by calling upon witnesses, and by such other means as seems necessary. I think it should in good time bring in a printed report of such depth and magnitude as will bring immediately home to each of us the problem of the Academy and its future in a world that may seem to have outgrown these primitive institutions. I suggest this body might take as its principal inquiries these:

1. The nature of the organization of the Academy and of its meetings, in relation to the furtherance of research and of intellectual cooperation in New England.

2. The responsibility of the Academy for the intellectual life of New England, and the possibility of making this body and the building in increasing degree a focal point for joint enterprises, cooperative projects, and the like.

3. The question of the Academy building—cannot it be repaired and modernized so that it will better further the purposes of the Academy?

4. A campaign for increasing the endowment of the Academy, having in mind specific programs upon which the Academy may fruitfully embark.

This is, I know, ambitious. It may seem to many of you vague. Perhaps I am raising these questions in the wrong place or in the wrong way or at the wrong time. But I have a feeling that what we determine to do in the next two or three years will powerfully influence our whole future existence; I have a feeling that, rich as is New England in institutions of learning, they will welcome some positive program to link together the interests of the learned and the problems of society in the years immediately to come; and I earnestly desire that the American Academy of Arts and Sciences, the second oldest learned society in the United States, should assume the captaincy and take the lead because, it seems to me, history and tradition say that it should do so.

RECORDS OF MEETINGS

One Thousand Two Hundred and Eightieth Meeting

OCTOBER 14, 1942—STATED MEETING

The Academy met at its House at 8.25 P. M.

The President in the Chair.

This meeting has been designated as Ladies' Night, and there were present 250 Fellows and guests.

The records of the meeting of May 13 were read and approved.

The following communications were presented:

George Sarton: "Leonardo, Man of Science."

Otto Benesch: "Leonardo da Vinci and the Beginning of Scientific Drawing."

Dr. Benesch also arranged an exhibit of reproductions of some of Leonardo's scientific drawings, consisting of facsimiles loaned by the Fogg Art Museum and of illustrated books loaned by the Harvard University Library.

The meeting was dissolved at ten o'clock.

One Thousand Two Hundred and Eighty-first Meeting

NOVEMBER 18, 1942.— STATED MEETING

The Academy met at its House at 8.27 P. M.

The President in the Chair.

There were present thirty-three Fellows and eighteen guests.

In the absence of the Recording Secretary, the Corresponding Secretary acted as Recording Secretary *pro tem.*

The records of the meeting of October 14 were read and approved.

The Corresponding Secretary reported the receipt of letters accepting Fellowship from Francis Birch, John Nash Douglas Bush, William Irving Clark, Samuel Cornette Collins, Donald Kirk David, Howard Sylvester Ellis, Russell Gibson, Roger Sherman Greene, Otto Kinkeldey, Wassily W. Leontief, Samuel Albert Levine, Richard Peter McKeon, Daniel L. Marsh, William Ralph Maxon, Hermann Joseph Muller, William Andrew Paton, Paul Anthony Samuelson, and Otto Struve; also a letter accepting Foreign Honorary Membership from Lorenzo Raimundo Parodi.

He also reported the receipt of letters resigning Fellowship from Edward H. Chamberlin, Henry T. Lummus and Edgar H. Sturtevant.

A vote was then taken on a proposed amendment to the Statutes, Chapter II, Article 2, which had been recommended to the Academy by the Council at the annual meeting last May, as follows:

"Fellows of the Academy on retiring from their academic or other regular duties may, if they so desire and with the approval of the Council, be transferred to the status of Fellows Emeriti. Fellows Emeriti shall be exempt from the payment of dues and may not hold office in the Academy, but shall have all the other privileges of Fellowship. In the published lists of the membership of the Academy, Fellows Emeriti shall be separately classified and shall be outside the statutory limit set on the number of Fellows."

This amendment was adopted by a vote of twenty-eight in favor and one against.

The following communication was presented:

Charles W. Eliot, 2nd: "City Planning."

The meeting was dissolved at 9.46 P. M.

One Thousand Two Hundred and Eighty-second Meeting

DECEMBER 9, 1942—STATED MEETING

The Academy met at its House at 8.30 P. M.

The President in the Chair.

There were present forty-one Fellows and twenty-one guests.

The records of the meeting of November 18 were read and approved.

The Corresponding Secretary reported the receipt of a letter from Gordon W. Allport, resigning Fellowship.

The following communication was presented:

Ross A. McFarland: "Human Problems in Aviation," illustrated with slides and moving pictures.

An exhibit in the Reading Room showed recent astronomical discoveries: a first magnitude nova, a new comet, evidence for a planet in another stellar system.

One paper was read by title: "The Advent of the Microscope in America, with Notes on its Earlier History," by Frederic T. Lewis.

The meeting was dissolved at 10.10 P. M.

One Thousand Two Hundred and Eighty-third Meeting

JANUARY 13, 1943—STATED MEETING

The Academy met at its House at 8.25 P. M.

The President in the Chair.

There were present thirty-nine Fellows and sixty-one guests, many of them headmasters of public and private schools, who had been specially invited to this meeting.

The records of the meeting of December 9 were read and approved.

The Corresponding Secretary reported the receipt of a letter from Henry J. Cadbury accepting his election to Fellowship.

He also announced that the Council had appointed Melvin T. Copeland and Edmund M. Morgan to fill the vacancies in the Council created by the resignations of Edward H. Chamberlin and Edward S. Thurston, for the rest of the academic year.

The following communication was presented:

Henry M. Wriston: "The Problem of the Liberal Arts College."

In the Reading Room there was exhibited a selection of notable specimens of mathematical texts, printed in each century from 1500 to the present.

The meeting was dissolved at ten o'clock.

One thousand Two Hundred and Eighty-fourth Meeting

FEBRUARY 10, 1943—STATED MEETING

The Academy met at its House at 8.29 P. M.

The President in the Chair.

There were present thirty Fellows and fourteen guests.

In the absence of the Recording Secretary, the Corresponding Secretary acted as Recording Secretary *pro tem.*

The records of the meeting of January 13 were read and approved.

It was announced that a special meeting was to be held on April 6 in honor of Governor Bautista and Ambassador Najera of Mexico.

The following communication was presented:

Paul C. Mangelsdorf: "Economic Plants as Weapons of War."

An exhibit of photographs, drawings and materials collected on the site of the Boylston Street Fishweir, was described by Dr. Frederick Johnson.

The meeting was dissolved at 10.02 P. M.

One Thousand Two Hundred and Eighty-fifth Meeting

MARCH 10, 1943—STATED MEETING

The Academy met at its House at 8.34 P. M.

The President in the Chair.

There were present forty-eight Fellows and twenty-six guests.

In the absence of the Recording Secretary, the Corresponding Secretary was asked to assume his duties.

The records of the meeting of February 10 were read and approved.

It was announced that the President had appointed the Nominating Committee, as follows:

Ernest H. Huntress, of Class I
Ivan M. Johnston, of Class II, *Chairman*
Dumas Malone, of Class III
S. Foster Damon, of Class IV

On the recommendation of the Council the following appropriations were voted for the year 1943–44:

From the income of the General Fund, $6,825, to be used as follows:

for House expenses	$2,200
for General and Meeting expenses	900
for Library expenses (salaries, books, periodicals and binding)	2,625
for Treasurer's expenses	1,100
	$6,825

From the income of the Publication Funds, $2,000, to be used for publications.

From the income of the Rumford Fund, $3,000, to be used at the discretion of the Committee.

From the income of the C. M. Warren Fund, $750, to be used at the discretion of the Committee.

The President announced that there would be a special meeting on April 6, in honor of Governor Gonzalo Bautista, of the State of Puebla, Mexico, and Ambassador Najera, and that this would take the place of the regular April meeting.

The following communication was presented:

Manley O. Hudson: "International Organization after the War."

The meeting was dissolved at 10.04 P. M.

One Thousand Two Hundred and Eighty-sixth Meeting

APRIL 6, 1943—SPECIAL MEETING

A special meeting was held at the House of the Academy at 8.30 P. M. at which the guests of honor were Dr. Gonzalo Bautista, Governor of the State of Puebla, Mexico, and His Excellency, the Mexican Ambassador. Nearly three hundred persons were present, including members of the Pan-American Society of Massachusetts, and members of the families of Fellows.

The program was as follows:

Presentation of the greetings of the Academy to its guests: President Shapley.

Response by Governor Bautista.

Address: "Mexican-American Cultural Relations:" Ambassador Najera.

Address: "Earthquakes, Volcanoes and Mountain Systems of Mexico:" Professor Kirtley F. Mather.

Reception in honor of the Governor and the Ambassador.

There was a special exhibit of reproductions of pre-Columbian Mexican manuscripts, and another of seismograms.

This meeting took the place of the stated April meeting of the Academy, which would have been held on April 14.

One Thousand Two Hundred and Eighty-seventh Meeting

MAY 12, 1943—ANNUAL MEETING

The Academy met at its House at 8.22 P. M. Vice-President Robinson in the Chair.

There were present forty-four Fellows and twenty guests.

The records of the meetings of March 10 and April 6 were read by the Corresponding Secretary in the absence of the Recording Secretary and approved by the Academy.

The Corresponding Secretary made the following announcements from the Council:

The Permanent Science Fund Committee has been reappointed: John W. Bunker, *Chairman*, George R. Agassiz, Kenneth T. Bainbridge, Gregory P. Baxter, Charles T. Brues, Hudson Hoagland, Walter S. Hunter, S. Burt Wolbach.

The following grants have been made from the Permanent Science Fund:

1. To Elso S. Barghoorn, Jr., Instructor in Biology, Amherst College, for expendable materials, compensation for assistance, and field expenses in a continuation of his studies on the structural and mechanical changes which occur in submerged wood and other plant remains, $350.

2. To Alfred Rehder, Curator of the Herbarium, Emeritus, Arnold Arboretum, for one-half the cost of library work in various cities for completion of the manuscript on the Bibliography of Cultivated Trees and Shrubs, $100.

Professors Edward K. Rand and Carl N. Jackson have been transferred to the status of Fellows Emeriti, in accordance with the amendment to the Statutes adopted by the Academy in November 1942.

A letter has been received from Wilmer Lanier Barrow accepting his election as a Fellow.

At a special meeting of the Council on April 20, the following were elected to Fellowship in the Academy:

CLASS I

Section 1. Edwin Powell Hubble, Pasadena, Cal.
Cecilia Helena Payne-Gaposchkin, Lexington

Section 2. Enrico Fermi, Leonia, N. J.
Philipp Frank, Cambridge
Edwin Herbert Land, Cambridge
Donald Charles Stockbarger, Belmont

Section 3. Hugh Stott Taylor, Princeton, N. J.

Section 4. Bradley Dewey, Cambridge

CLASS II

Section 1. Lewis Don Leet, Harvard

Section 3. David Bruce Dill, Arlington
Brenton Reid Lutz, Melrose

Section 4. Arlie Vernon Bock, Cambridge
Chester Scott Keefer, Brookline

CLASS III

Section 1. Charles Edward Wyzanski, Jr., Brookline

Section 2. Payson Sibley Wild, Jr., Cambridge

Section 3. Augusta Fox Bronner (Mrs. William Healy), Boston

Benjamin Morris Selekman, Cambridge

Section 4. Ada Louise Comstock (Mrs. Wallace Notestein), Cambridge

CLASS IV

Section 1. Angus Dun, Cambridge

Section 2. Carleton Stevens Coon, Wakefield
Hugh O'Neill Hencken, Chestnut Hill

Section 3. Perry Gilbert Eddy Miller, Cambridge
Jean-Joseph Seznec, Cambridge

Section 4. Leonard Bacon, Peace Dale, R. I.
Willa Cather, New York, N. Y.
Randall Thompson, Charlottesville, Va.
Thornton Niven Wilder, New Haven, Conn.

The following reports were presented:

REPORT OF THE COUNCIL

Since the last report of the Council the deaths of twenty-one Fellows have been reported: Joseph Henry Beale, Stephen Vincent Benét, Franz Boas, Ralph Adams Cram, John Frank Daniel, Davis Rich Dewey, Frank Edgar Farley, James Edmund Ives, James Richard Jewett, John Ellerton Lodge, Abbott Lawrence Lowell, Charles Thomas Main, Edward Caldwell Moore, George Andrew Reisner, Robert Wilcox Sayles, Charles Schuchert, Andrew Watson Sellards, William Albert Setchell, Joseph Warren, Grenville Lindall Winthrop, Joseph Ruggles Worcester; and of four Foreign Honorary Members: Frank Dawson Adams, Sir Joseph Larmor, Charles Tate Regan, Richard Willstätter.

Twenty-one Fellows and one Foreign Honorary Member were elected by the Council and announced to the Academy in May 1942.

The roll now includes 773 Fellows, 2 Fellows Emeriti, and 119 Foreign Honorary Members (not including those elected in 1943).

REPORT OF THE TREASURER

*RECEIPTS

Academy, General:		
From: Investment Income (Schedule D)	$12,507.28	
Less: Income to Special Funds	9,548.95	
	$2,958.33	
Assessments and Admission Fees	4,175.00	
		$7,133.33
Amory Fund Committee:		
From: Investment Income		$2,913.87
Publications Committee:		
From: Investment Income	$2,384.53	
Sale of Publications	682.50	
Rumford Fund	720.00	
Subscriptions, Lake Publication	255.80	
		4,042.83
Rumford Fund Committee:		
From: Investment Income		3,061.00
Warren Fund Committee:		
From: Investment Income		967.73
Mabel S. Agassiz Fund:		
From: Investment Income		111.20
Permanent Science Fund:		
From: Boston Safe Deposit and Trust Co., Trustee	$15,946.62	
Return of balance of Grant	21.03	
Investment Income	47.26	
		16,014.91
Kennelly Fund:		
From: Investment Income		63.36
Total Receipts		$34,308.23

†EXPENDITURES

Academy, General:		
Library, Salaries	$2,048.00	
Books & Binding (Net)	362.58	
	$2,410.58	
General (Net)	861.45	
House (Net)	2,559.46	
President's Office	7.50	
Treasurer's Office	539.35	
Insurance	605.79	
		$6,984.13

* Excluding sales of securities.
† Excluding purchases of securities.

Amory Fund:		
Expense		$48.00
Publications Committee:		
General	$3,496.72	
Lake	174.39	
		3,671.11
Rumford Fund Committee:		
Grants	$400.00	
To Rumford Fund	720.00	
		1,120.00
Warren Fund Committee:		
Grants		700.00
Mabel S. Agassiz Fund:		
For Meetings		111.20
Permanent Science Fund:		
Grants	$1,585.00	
Expense	1.65	
		1,586.65
Special Expense:		
Recording Secretary		27.40
Total Expenditures		$14,248.49

Report of the Library Committee

In addition to the many volumes and serials consulted at the Academy within the past year, there were borrowings by eighteen outside libraries. Of the total of 87 volumes and 16 unbound numbers borrowed, very few were taken out by Fellows of the Academy, and the inference is not unwarranted that the resources of our Library are perhaps better realized from without than from within our walls.

The addition of 217 volumes since last year's report brings the number on the shelves to 47,114. Of the additions, 153 were received by gift or exchange and 64 were purchased. Most of the items purchased were parts of serial sets from the Library of the Boston Society of Natural History, filling gaps in the Academy sets. The price paid for these was $110. From the general sale of duplicates the Academy has realized $165.

At the Stated Meeting of October 11, 1939, the Corresponding Secretary read an excerpt from the will of the late Arthur E. Kennelly, by the terms of which the Academy was accorded the choice of such volumes from his scientific library as might remain after the fulfillment of certain other bequests. These items have all been inspected and several volumes and pamphlets selected.

With the approval of the Council of the Academy and of the Director of the Massachusetts Historical Society, The Academy's loan of its single volume (1759–60) of the *Boston Post-Boy* was transferred from the Historical Society (there a duplicate) to fill a gap in the newspaper files of the American Antiquarian Society. In requesting this transfer, the Director of the latter society has further proposed the permanent exchange for this item of certain scientific material to be later submitted for approval.

A preliminary survey has been made of the stacks relative to the need for oiling, repair or re-binding of the older volumes. In the absence of appropriation for this purpose it is proposed to spread the work over a time sufficient to place it within current resources.

The appropriation for the year ending March 31, 1943, was $3000, and the expenditure was as follows:

Salaries	$2,048.00
Purchase of books and periodicals	299.93
Binding	227.65
Total	$2,575.58

Respectfully submitted,

Frederick H. Pratt, *Librarian*

May 12, 1943.

Report of the Rumford Committee

Some weeks ago, the chairman of this Committee wrote to thirteen recent recipients of Rumford grants. From four no replies have as yet been received. Of the remaining nine, five report progress and two complete cessation of the research owing to the war. One, for a like reason, suggests the return of the Rumford grant. By one the statement is made that an instrument has been built but that its test has been indefinitely postponed because of war conditions.

A meeting of the Rumford Committee was held January 11, 1943. As there were no applications for grants, the sole topic under discussion was the nomination of the Rumford medalist for 1943. Charles Edward Kenneth Mees was chosen by the five members of the Committee who were present. This nomination was later made unanimous by letters received from the two absentees.

During March a confirmation of this nomination, as required by the statutes, was obtained. The vote was again unanimous.

The Committee, therefore, presented his name to the Academy requesting its approval of the nomination, the medals to be awarded "For his contributions to the science of photography."

Respectfully submitted,

NORTON A. KENT, *Chairman*

May 12, 1943.

REPORT OF THE CYRUS M. WARREN COMMITTEE

The Committee had available for grants during the fiscal year 1942–43 the sum of $900. From this amount the following grants totalling $700 have been made:

To Professor F. F. Nord of Fordham University, New York City, a grant of $300 for the purchase of some rare sugars for use in continuing research in the field of enzyme reaction.

To Dr. Carl C. Smith of the University of Cincinnati, Cincinnati, Ohio, a grant of $400 for materials to be used in the investigation of the chemical properties of angiotonin.

The balance of $200 has been added to the appropriation for the coming year, 1943–44.

A communication was received in May 1942 from Professor Arthur F. Scott reporting on work undertaken with the aid of a grant in 1938. Brief reports were received from Professor J. W. McBain and Dr. Philip Pizzolato in regard to grants received in 1941. Dr. C. C. Smith has reported good progress on his work on the chemical properties of angiotonin.

Reprints have been received on work carried out with the assistance of grants, as follows:

Professor E. C. Gilbert: "The Apparent Energy of the N-N Bond as Calculated from Heats of Combustion" J. Am. Chem. Soc. *24*, 2369 (1942).

Professor Paul L. Kirk: "Microscopy of the Amino Acids and Their Compounds" Ind. and Eng. Chem. *13*, 587 (1941).

Professor G. Krotkov: Report and reprints on "Diurnal Changes in the Carbohydrates of Wheat Leaves" Can. Jour. of Research, *21*, 26 (1943).

Professor F. F. Nord: "Essential Steps in the Enzymatic Breakdown of Hexoses and Pentoses" Archives of Biochemistry, *1*, 143 (1942).

The resignation during the past year of two members of the Committee is reported: that of Professor Reid Hunt and Professor Tenney L. Davis.

Respectfully submitted,

FREDERICK G. KEYES, *Chairman*

May 12, 1943.

REPORT OF THE COMMITTEE OF PUBLICATION

The Committee held one meeting during the year on October 4, 1942. Other business was transacted by correspondence which was necessitated by the absence of the Chairman in Washington.

During the year the following numbers of the *Proceedings* were published: Vol. 74, No. 14. Records of meetings: List of Members: Statutes. Vol. 75, No. 1. Whitehead, A. N. and others. Papers on post-war problems. At the present time the following papers are in proof:

1. F. M. Carpenter: The Lower Permian Insects of Kansas. Part 9.

2. Tenney L. Davis and Chao Yün-Ts'ung: Chao Hsüeh-Min's Outline of Pyrotechnics.

3. D. L. Augustine: Some Factors in the Defense Mechanism against reinfection with *Trypanosoma Lewisii*.

A couple of articles were submitted by persons not members of the Academy which were referred to readers in the respective fields, and declined upon receipt of their reports. No other material is at present in the hands of the Editor for publication.

Professor and Mrs. Lake have been actively at work on the Index to *Dated Greek Manuscripts*. Six of the main rubrics in this have been prepared by them and checked by the Editor with the assistance of Drs. Paul J. Alexander and Milton V. Anastos, Junior Fellows at Dumbarton Oaks. The remaining indices are expected to be finished shortly. Owing to illness the Editor has been unable to make arrangements with the Waverly Press for the transfer of the bulk of the remainders of the publication to Boston, but hopes to do so before he leaves Washington in June.

Professor Hatch has been working on the indices to his *Album of Dated Syriac Manuscripts*, and the major part of these have been prepared and sent on to the printer.

The Committee wishes to go on record with an

expression of their deep regret at the death of their fellow member, Professor Joseph H. Beale, on January 20, 1943. His collaboration in recent years had been impeded by illness, but his interest remained none the less unflagging and his sound counsel was of great help in various problems which arose.

Respectfully submitted,

ROBERT P. BLAKE, *Chairman*

May 12, 1943.

REPORT OF THE HOUSE COMMITTEE

During the year ending March 31, 1943, the House Committee had at its disposal funds amounting to $2,195, made up as follows:

Appropriation for 1942–43	$2,000
Received from other societies for the use of rooms	195
Total	$2,195

The expenditures amounted to $2,754.46. Of this the sum of $2,543.59 was spent for routine expenses and $210.87 for upkeep and equipment.

Meetings have been held as follows:

The Academy	8
Archæological Institute of America, Boston Society	2
Boston Surgical Society	3
New England Botanical Club	9
Total	22

The Council Chamber has been used for Academy Council and Committee meetings, and also by the Trustees of the Children's Museum and the New England Farm and Garden Association.

A detailed list of expenditures follows:

Janitor	$951.00
Electricity: Light	205.01
Power	68.51
Fuel	966.35
Elevator service and repairs	117.96
Telephone	124.47
Gas	50.19
Water	40.48
Upkeep and equipment	210.87
Janitor's supplies and sundries	19.62
Total	$2,754.46

Appended are the revised "Rules for the use of the House," adopted by the Council in May 1942:

RULES FOR THE USE OF THE HOUSE

(Adopted by the Council, May 13, 1942)

PREAMBLE

The Council reserves the right to grant permission to or withhold permission from any organization which may seek to use the House for regular meetings or for more than one meeting in any one calendar year.

RULES

1. The House of the Academy shall be available for the use of Fellows of the Academy at all reasonable hours.

2. Except as otherwise provided, the privilege of using the House of the Academy shall be enjoyed by Fellows only, who shall, however, be permitted to bring guests with them to a number not exceeding twenty.

3. Fellows introducing guests shall be responsible for any injury caused by them to the property of the Academy.

4. Fellows or organizations introduced by them may use the Committee Room and the Reception Room on the ground floor and also the Assembly Hall and the Reading Room. For the use of the rooms on the ground floor no charge shall be made. For the use of the Assembly Hall a charge of $10 will be made for each occasion; for the Reading Room there will be a charge of $15 if no refreshments are served; or $20, if there are refreshments. An additional charge of $5 will be made for each hour or fraction of an hour during which the rooms are occupied after 11 P. M. The House Committee is authorized, however, to reduce the charges for small groups.

5. A visitors' book shall be kept in such place as the House Committee may determine, in which the names of Fellows using the House and the names of their guests, or organizations they introduce, shall be entered.

6. Fellows, or organizations introduced by them, desiring to use either of the two large rooms for a meeting shall make application to the Assistant Librarian not less than one week in advance of the time at which the meetings is to be held.

7. The privileges of the House shall be limited to Fellows and their guests and to learned and cultural societies introduced by Fellows, ap-

proved by the House Committee, and endorsed by the Council. Societies not on the approved list should make written application to the Assistant Librarian at least two weeks in advance of the proposed meeting, and in any event sufficiently in advance to permit of action by the Council.

Respectfully submitted,
E. F. Langley, *Chairman*

May 12, 1943.

Mr. Edmund A. Whitman spoke of the need of greater maintenance expenditure, particularly on the heating and ventilating system, which is obsolete and in poor condition. It was *Voted*, that the problem be referred to the Policy Committee, with the suggestion that the desirability of increasing the annual dues be considered.

A motion was made that the annual dues for Fellows resident within the fifty mile radius be set at ten dollars for the year 1943–44. Mr. Whitman proposed to postpone action on dues until the report of the Policy Committee. After brief discussion the amendment was withdrawn and the original motion was carried.

On the recommendation of the Rumford Committee it was *Voted*, to award the Rumford Medals to Charles Edward Kenneth Mees for his contributions to the science of photography.

The following officers and committees were elected for the coming year:

Harlow Shapley, *President*
Percy W. Bridgman, *Vice-President for Class I*
S. Burt Wolbach, *Vice-President for Class II*
Sidney B. Fay, *Vice-President for Class III*
Fred N. Robinson, *Vice-President for Class IV*
Abbott P. Usher, *Corresponding Secretary*
Hudson Hoagland, *Recording Secretary*
Horace S. Ford, *Treasurer*
Frederick H. Pratt, *Librarian*
Robert P. Blake, *Editor*

Councillors for Four Years:

John M. Lessells, of Class I
Charles A. Weatherby, of Class II
Robert G. Caldwell, of Class III
Kenneth J. Conant, of Class IV

Councillor for Three Years:

Calvert Magruder, of Class III

Councillor for Two Years:

Donald S. Tucker, of Class III

Committee on Policy and Resources:

Robert G. Dodge, *Member for Five Years*

Finance Committee:

Jerome C. Hunsaker — John F. Ebersole
Ralph E. Freeman — Henry P. Kendall

Rumford Committee:

Norton A. Kent, *Chairman*

Percy W. Bridgman — George W. Pierce
Harry M. Goodwin — George R. Harrison
Harlow Shapley — Robert B. Lindsay

C. M. Warren Committee:

Frederick G. Keyes, *Chairman*

Gregory P. Baxter — Grinnell Jones
Walter L. Jennings — Avery A. Morton
Charles A. Kraus — Walter C. Schumb

Committee of Publication

Robert P. Blake, *Chairman*

Edwin C. Kemble, of Class I
Ralph H. Wetmore, of Class II
Arthur H. Cole, of Class III
Robert P. Casey, of Class IV

Committee on the Library:

Frederick H. Pratt, *Chairman*

Raymond C. Archibald, of Class I
Thomas Barbour, of Class II
Francis N. Balch, of Class III
Henry B. Washburn, of Class IV

Auditing Committee:

Erwin H. Schell — Alexander Forbes

House Committee:

Ernest F. Langley, *Chairman*

H. Addington Bruce — Robert P. Bigelow
Walter E. Clark

Committee on Biographical Notices:

Three Years:

Raymond C. Archibald — Samuel E. Morison

Two Years

Austin W. Scott

Committee on Meetings:

THE PRESIDENT

THE RECORDING SECRETARY

LEONARD CARMICHAEL GEORGE SCATCHARD
SAMUEL H. CROSS FREDERICK K. MORRIS

Three communications were then presented:

George Sarton: "Copernicus."

Fred L. Whipple: "The Solar System."

Bart J. Bok: "The Milky Way and the Metagalaxy."

Some original editions of the works of Copernicus, loaned by the Harvard College Library, were on exhibition in the office.

The meeting was dissolved at 10.25 P. M.

One Thousand Two Hundred and Eighty-eighth Meeting

OCTOBER 13, 1943—STATED MEETING

The Academy met at its House at 8.20 P. M.

The President in the Chair.

There were present fifty-two Fellows and forty-three guests.

The records of the meeting of May 12 were read and approved.

The Corresponding Secretary reported the receipt of letters accepting Fellowship from the following: Leonard Bacon, Arlie Vernon Bock, Augusta Fox Bronner (Mrs. William Healy), Willa Cather, Ada Louise Comstock (Mrs. Wallace Notestein), David Bruce Dill, Angus Dun, Philipp Frank, Hugh O'Neill Hencken, Chester Scott Keefer, Edwin Herbert Land, Lewis Don Leet, Brenton Reid Lutz, Cecilia Payne Gaposchkin, Benjamin Morris Selekman, Jean Joseph Seznec, Donald Charles Stockbarger, Hugh Stott Taylor, Randall Thompson, Payson Sibley Wild, Jr., and Charles Edward Wyzanski, Jr.

He also reported the receipt of a letter from Henry I. Harriman resigning Fellowship, to take effect in May 1944.

The Rumford medals were then presented to Dr. Charles Edward Kenneth Mees for his contributions to the science of photography.

Dr. Mees made an address on "Sensitizing Dyes and Their Use in Photography," which was illustrated with lantern slides as well as a practical demonstration.

The meeting was dissolved at 10.00 P. M.

One Thousand Two Hundred and Eighty-ninth Meeting

NOVEMBER 10, 1943—STATED MEETING

The Academy met at its House at 8.25 P. M.

The President in the Chair.

This meeting had been designated as Ladies' Night, and there were present about 180 Fellows and guests.

The records of the meeting of October 13 were read by the Corresponding Secretary in the absence of the Recording Secretary, and approved by the Academy.

The Corresponding Secretary reported the acceptance of his election as a Fellow by Perry Gilbert Eddy Miller.

Professor Martin Wagner and Mr. Hermann Herrey addressed the Academy on "The Future of Our Cities." There were lantern slide illustrations, and a special exhibition in the Reading Room, arranged by Mr. Herrey.

The meeting was dissolved at 10.15 P. M.

One Thousand Two Hundred and Ninetieth Meeting

DECEMBER 8, 1943—STATED MEETING

The Academy met at its House at 8.20 P. M.

The President in the Chair.

There were present fifty-five Fellows and twenty-five guests.

The records of the meeting of November 10 were read and approved.

The following communication was presented:

Frederick K. Morris: "European Topography and the Progress of the Allied Armies," illustrated with lantern slides and maps.

The meeting was dissolved at 9.45 P. M.

One Thousand Two Hundred and Ninety-first Meeting

JANUARY 12, 1944—STATED MEETING

The Academy met at its House at 8.28 P. M.

The President in the Chair.

There were present fifty-three Fellows and fifty guests.

In the absence of the Recording Secretary, his duties were assumed by the Corresponding Secretary.

The records of the meeting of December 8 were read and approved.

The Corresponding Secretary reported a proposed amendment to the Statutes, which had been approved by the Council, as follows:

Chapter II, Article 1, paragraph 1, to read as follows: "The Academy shall consist of Fellows, elected from the citizens or residents of the United States of America, Fellows Emeriti, and Foreign Honorary Members. They shall be arranged in four Classes, according to the Arts and Sciences in which they are severally proficient and each Class shall be divided into four Sections, namely:"

The Academy voted to amend the Statutes as recommended by the Council.

The following communications were presented: T. North Whitehead and Warren A. Seavey: "How Should Post-War Germany Be Treated?"

The meeting was dissolved at 10.23 P. M.

One Thousand Two Hundred and Ninety-second Meeting

FEBRUARY 9, 1944—STATED MEETING

The Academy met at its House at 8.30 P. M.

The President in the Chair.

There were present fifty-seven Fellows and thirty guests.

The records of the meeting of January 12 were read and approved.

A letter from Boston University was read inviting the members of the Academy to attend the sessions of an Institute on Post-War Problems which the University is planning to hold in connection with its Founder's Day observance, March 11, 12 and 13.

The following communication was presented:

Jerome C. Hunsaker: "Aeronautical Research," illustrated with lantern slides and motion pictures.

There was also an exhibit of astronomical slides by Dr. Shapley to illustrate recent astronomical discoveries.

The meeting was dissolved at ten o'clock.

One Thousand Two Hundred and Ninety-third Meeting

MARCH 8, 1944—STATED MEETING

The Academy met at its House at 8.25 P. M.

The President in the Chair.

There were present thirty-nine Fellows and twelve guests.

The records of the meeting of February 9 were read and approved.

The Corresponding Secretary reported the receipt of a letter from Bradley Dewey accepting his election to Fellowship.

On the recommendation of the Council the following appropriations were made for the ensuing year:

From the income of the General Fund, $7225, to be used as follows:

for House expenses	$2,600
for General and Meeting expenses	1,000
for Library expenses	2,625
for Treasurer's expenses	1,000
	$7,225

From the income of the Publication Funds, $2,144, to be used for publication.

From the income of the Rumford Fund, $3111, to be used at the discretion of the Committee.

From the income of the C. M. Warren Fund, $870, to be used at the discretion of the Committee.

The President announced the appointment of the Nominating Committee:

Dugald C. Jackson, of Class I, *Chairman*
Robert P. Bigelow, of Class II
Henry P. Kendall, of Class III
William C. Greene, of Class IV

He reported the discovery, through the calculations of Mr. Clemence of the U. S. Naval Observatory, that the orbit of the Earth rotates in space in accordance with the Einsteinian theory of relativity. Heretofore the "advance of the longitude of the perihelion" of a planetary orbit was known for Mercury only.

The following communication was presented:

John H. Williams: "Post-War Currency Stabilization."

After the address by Dean Williams the President reported on a special exhibit of a new kind of "fishing frog"—a sort of deep sea monster called *Reganichthys giganteus* nov. gen. et sp., by Fellows H. B. Bigelow and Thomas Barbour, who have recently procured this unusual fish from a fisherman off the Maine coast. It belongs to the group called *Ceratioids*.

The meeting was dissolved at 10.15 P. M.

One Thousand Two Hundred and Ninety-fourth Meeting

APRIL 12, 1944—STATED MEETING

The Academy met at its House at 8.30 P. M.

The President in the Chair.

There were present twenty-nine Fellows and twenty-four guests.

The records of the meeting of March 8 were read and approved.

The Corresponding Secretary announced that the Council had made the following grants from the Permanent Science Fund:

1. To Theodor von Brand and W. Gardner Lynn, Catholic University of America, Washington, D. C., for special equipment for use in investigation of metabolic rates in turtle embryos, $80.

2. To Curtis L. Newcombe, Associate Professor of Biology, College of William and Mary, Williamsburg, Va., for assistance in a further study of the larval stages of *Volsella demissus*, the ribbed mussel, a source of food, $600.00.

3. To Frances A. Schofield, Adjunct Professor of Chemistry, Randolph Macon Woman's College, Lynchburg, Va., to provide assistance and expendable materials in a further study of glycogen forming activity of alanine isomers, $500.

4. To Abraham M. Shanes, Instructor in Physiology, New York University, College of Dentistry, for assistance in extending a study of bioelectric potentials, $450.

The President discussed plans for Academy coöperation next year with the Institute of Religious and Social Studies, as considered earlier in the evening by the Council.

The following communication was presented:

Frederick Fuller Russell: "The War and Public Health."

The meeting was dissolved at ten o'clock.

One Thousand Two Hundred and Ninety-fifth Meeting

MAY 10, 1944—ANNUAL MEETING

The Academy met at its House at 8.25 P. M.

The President in the Chair.

There were present forty-eight Fellows and thirty guests.

The records of the meeting of April 12 were read and approved.

The Corresponding Secretary reported that Arturo Rosenblueth had resigned his Fellowship.

He then read the annual report of the Council:

REPORT OF THE COUNCIL

Since the last report of the Council there have been reported the deaths of thirty-three Fellows: Joseph Sweetman Ames, Charles McLean Andrews, Edward Cooke Armstrong, Charles Macfie Campbell, James McKeen Cattell, Russell Henry Chittenden, Winthrop More Daniels, Charles Benedict Davenport, William Johnson Drisko, Arthur Fairbanks, Albert Bushnell Hart, Aleš Hrdlička, Douglas Wilson Johnson, Arthur Keith, Alexander George McAdie, Lee Sullivan McCollester, Edward Bennett Mathews, William Cardinal O'Connell, Robert Ezra Park, William Lyon Phelps, James Bissett Pratt, Henry Washington Prescott, Alfred Lawrence Ripley, William Emerson Ritter, Frank Schlesinger, James Brown Scott, Henry Lloyd Smyth, John Frank Stevens, John Stone Stone, Robert Spurr Weston, Joseph Ruggles Worcester, David Elbridge Worrall, Karl Young; and two Foreign Honorary Members: Sir William Searle Holdsworth and Sir Aurel Stein.

The following Fellows have been classified as Fellows Emeriti: Edward B. Hill (Mar. 8, 1944), William E. Hocking (Nov. 10, 1943), Carl N. Jackson (Apr. 20, 1943), John L. Lowes (Feb. 9, 1944) and Edward K. Rand (Dec. 9, 1942).

Twenty-seven Fellows were elected by the Council and announced to the Academy in May 1943.

The roll now includes 759 Fellows, five Fellows Emeriti, and 117 Foreign Honorary Members (not including those elected in May 1944).

The reports of the Treasurer and of the standing committees, which follow, were not read to the Academy but to the Council at its meeting preceding the Academy meeting. A summary of them was, however, given by the President:

REPORT OF THE TREASURER

*RECEIPTS

Academy, General:			
From: Investment Income	$12,747.65		
Less: Income to Special Funds	10,064.66		
		$2,682.99	
Assessments and Admission Fees		4,210.00	
			$6,892.99
Amory Fund Committee:			
From: Investment Income			3,155.51

* Excluding sales of securities.

Publications Committee:		
From: Investment Income	$2,281.60	
Sale of Publications	787.92	
Contribution	5.00	
Lake Publication, from American Council Learned Societies	2,500.00	
		$5,574.52
Rumford Fund Committee:		
From: Investment Income	$3,113.50	
Return of Grant	400.00	
		3,513.50
Warren Fund Committee:		
From: Investment Income		925.95
Mabel S. Agassiz Fund:		
From: Investment Income		106.40
Permanent Science Fund:		
From: Boston Safe Deposit and Trust Co., Trustee	$9,949.74	
Return of balance of Grant	7.72	
Investment Income	417.70	
		10,375.16
Kennelly Fund:		
From: Investment Income		64.00
Total Receipts		$30,608.03

*Expenditures

Academy, General:		
Library, Salaries	$2,036.00	
Books & Binding	651.84	
	$2,687.84	
General (Net)	1,234.32	
House (Net)	2,524.35	
Treasurer's Office	570.07	
Insurance	589.70	
		$7,606.28
Amory Fund:		
Expense		53.00
Publications Committee:		
General	$898.87	
Lake	267.27	
		1,166.14
Rumford Fund Committee:		
Grants	$650.00	
Medal	350.04	
		1,000.04
Warren Fund Committee:		
Grants		250.00
Mabel S. Agassiz Fund:		
For Meetings		106.40
Permanent Science Fund:		
Grants	$1,050.00	
Expense	4.93	
		$1,054.93
Special Expense:		
Recording Secretary		1.91
Total Expenditures		$11,238.70

* Excluding purchases of securities.

Report of the Library Committee

During the year 1943–44, fifty-three volumes and sixteen unbound numbers of serials were borrowed by eight Fellows and nineteen libraries, and many more have been consulted at the Academy.

The number of volumes on the shelves at the time of the last report was 47,114. During the year 147 bound volumes were added, making the number now 47,261. Of this number 134 were received by gift or exchange, and 13 were purchased. To these are to be added a number of unbound volumes, parts of serial publications, and pamphlets, none of which are counted as volumes until they are bound.

From the American Antiquarian Society came a generous contribution of 14 bound volumes, 89 unbound volumes or numbers of serials, and a large number of pamphlets in exchange for our single volume of the *Boston Post-Boy* (1759–60), transferred as a duplicate by its borrower, the Massachusetts Historical Society, to complete the Antiquarian Society's valuable file.

The appropriation for the year ending March 31, 1944, was $2,625, the expenditures being as follows:

Salaries	$2,036.00
Purchase of books and periodicals	463.84
Binding	188.00
Total	$2,687.84

For the conservation of bindings, a special appropriation has been voted by the Council. In expectation of this initial grant of $100 expert advice and service have been obtained relative to oiling and repair. Of particular concern are the leather bindings of many treasured items, such as early volumes of the *Philosophical Transactions* and books belonging to the original bequest of Governor Bowdoin, the Founder, as well as the ancient works bearing the bookplate of President John Adams and other early Fellows.

Just as our rich files of modern serials and transactions in the physical sciences should attract the investigator who appreciates convenience of reference and ease of withdrawal, so our long-since static collection of 18th and 19th-century published books should have no small appeal for the antiquary who seeks to know what the Academy in the course of its first century saw fit to collect; for, in a sense not wholly figurative, they reflect the atmosphere our learned forerunners are presumed to have breathed.

Respectfully submitted,

FREDERICK HAVEN PRATT, *Librarian*

May 10, 1944.

REPORT OF THE RUMFORD COMMITTEE

During the past Academy year, but two grants have been made by the Rumford Committee. The first one, July 20, 1943, was made to Dr. Alvin H. Nielsen of the University of Tennessee for $350 for the purchase of a rock salt prism and four pairs of rock salt windows to be used in his study of the vibration-rotation bands of certain polyatomic molecules. The second grant was made on March 11, 1944, to Professor Richard H. Goodwin of the University of Rochester for $300 for the purchase of a Kleet Fluorimeter-Colorimeter and certain accessories to be used in his studies on the effect of light upon the development of pigments in plants. Both these grants were made through correspondence and personal conferences between the members of the Committee and the Chairman. Because of war conditions, no letters were sent out asking for reports of the progress being made by previous grantees.

On October 13, 1943, the Rumford Medals were presented to Dr. Charles Edward Kenneth Mees for his contributions to the science of photography.

Respectfully submitted,

NORTON A. KENT, *Chairman*

May 10, 1944.

REPORT OF THE CYRUS M. WARREN COMMITTEE

The Committee had available for grants during the fiscal year 1943–44 the sum of $950, of which $750 was appropriated at the March 1943 meeting and $200 remained as a balance from the previous year, 1942–43. From this amount two grants were made totalling $400, as follows:

To Professor Thomas W. Davis of New York University, a grant of $150 for the purchase of a Lecky-Ewell type of fractionating column and accessory equipment for use in analyzing mixtures of hydrocarbons.

To Doctor Walter J. Nickerson of Wheaton College, Norton, Massachusetts, a grant of $250 to defray the expense of obtaining improved manometric equipment for use in studies on cellular respiration and for reagents to be used in attempts to synthesize possible intermediate compounds in the oxidation of acetate and ethanol.

A report has been received from Professor Davis in the form of a letter in which he states that by the time he was able to place an order for a Lecky-Ewell fractionating column, it was no longer possible to obtain one. He has since then investigated the next best procedure and finds that additional funds will be needed to secure any other type of column. He is therefore holding the grant awaiting the opportunity to secure additional funds.

A report from Doctor Nickerson indicates that only a small portion of his grant has been used inasmuch as he has been in the Army for some time. The unused balance of his grant is being held till such time as he can resume his research, and further reports will then be submitted. Two publications have been completed and reprints will be sent as soon as they are received from the printer.

Reprints have beeen received as follows, covering work assisted by grants:

Professor E. C. Gilbert: "The Apparent Energy of the N-N Bond as Calculated from Heats of Combustion," C. M. Anderson and E. C. Gilbert, J. Am. Chem. Soc., *24*, 2369 (1942).

Professor F. F. Nord: "On the Mechanism of Enzyme Action. Part 21. Intermediary Phases in the Enzymatic Breakdown of d, l-Alanine by Fusarium lini Bolley." John C. Wirth and F. F. Nord, Archives of Biochemistry, *2*, 463 (1943).

Respectfully submitted,

FREDERICK G. KEYES, *Chairman*

May 10, 1944.

REPORT OF THE COMMITTEE OF PUBLICATION

The Publication Committee held one meeting on October 6, 1943, other business having been transacted by correspondence.

Dated Greek Manuscripts. Professor and Mrs. Lake have been busily engaged upon the Index to the ten fascicles which have appeared and have submitted all of the thirteen indices and a large part of the prefatory material to the editor. The greater part of this is now in proof, and it is hoped that the index volume can appear by the fall.

In June, 1943, the remainders of the set were transported by truck from Baltimore and stored in the Academy's House. The total cost of this operation amounted to about $160 and will represent an annual saving in insurance charges of $119.40. The Waverley Press has kept a certain number of sets on hand, and the store will be replenished from time to time as sales occur.

Album of Dated Syriac Manuscripts. All the material is in the hands of the printer, and all galley proof has been corrected, but there has been some delay in receiving the page proof. It is hoped that this will appear shortly, and the book can then come out in the fall. Arrangements have been made with the Harvard University Press to handle the sales of the publication which have been approved by the President and the Treasurer.

One article by Professor S. J. Barnett of the University of California at Los Angeles has been accepted and page proof is now in the Editor's hands. It is entitled "New Researches on Magnetization by Rotation and the Gyromagnetic Ratios of Ferromagnetic Substances."

A *Records* number of the Proceedings will be published this fall which will also contain the remainders of the memoirs on deceased Fellows whose publication has been perforce delayed.

Respectfully submitted,

ROBERT P. BLAKE, *Editor*

May 10, 1944.

REPORT OF THE HOUSE COMMITTEE

During the year ending March 31, 1944, the House Committee has had at its disposal funds amounting to $2,450, as follows:

Appropriation for the year 1943–44	$2,200
Received from other societies for the use of rooms	250
Total	$2,450

The expenditures amounted to $2,774.35. Of this the sum of $2,415.76 was spent for the routine expenses, janitor, heat, light, telephone, etc. and $358.59 for upkeep, furnishings and equipment. The most important item in the latter category was $188, paid for putting back into working order an automatic heating and ventilating control system, which was installed when the house was built, but which had not been used for a number of years. Repairs to the elevator cost $150.53.

Meetings have been held as follows:

The Academy	8
Archæological Institute of America, Boston Chapter	1
Architectural Society of M. I. T.	1
Boston Surgical Society	2
Institute of Food Technologists	7
Lowell Institute Alumni	1
New England Botanical Club	9
Total	29

The Council Chamber has been used for the Academy Council and Committee meetings, and also by the Trustees of the Children's Museum and the New England Farm and Garden Association.

A detailed list of the expenditures follows:

Janitor	$967.00
Fuel	840.38
Elevator service and repairs	222.53
Electricity: Light	192.79
Power	44.20
Telephone	137.89
Gas	53.63
Water	47.84
Upkeep, furnishings and equipment	208.06
Janitor's supplies and sundries	60.03
Total	$2,774.35

The deficit of $324.35 will be met by transfer from the General Fund.

Respectfully submitted,

ERNEST F. LANGLEY, *Chairman*

May 10, 1944.

The President announced that he had appointed a committee to cooperate with the committee of the Institute of Religious and Social Studies, consisting of E. S. Brightman, *Chairman*, the President of the Academy, A. D. Nock, and the Chairman of the House Committee.

On the recommendation of the Treasurer, the Academy voted that the annual assessment for

the year 1944–1945 for resident Fellows be ten dollars.

The annual election of officers and committees resulted as follows:

HOWARD M. JONES, *President*
GEORGE R. HARRISON, *Vice-President for Class I*
ALFRED C. LANE, *Vice-President for Class II*
RALPH E. FLANDERS, *Vice-President for Class III*
FRED N. ROBINSON, *Vice-President for Class IV*
ABBOTT P. USHER, *Corresponding Secretary*
HUDSON HOAGLAND, *Recording Secretary*
HORACE S. FORD, *Treasurer*
FREDERICK H. PRATT, *Librarian*
ROBERT P. BLAKE, *Editor*

Councillors for Four Years:

GUSTAVUS J. ESSELEN, of Class I
CHESTER S. KEEFER, of Class II
LAURENCE L. WINSHIP, of Class III
WARREN O. AULT, of Class IV

Councillor for One Year:

HYDER E. ROLLINS, of Class IV

Committee on Policy and Resources:

Member for Five Years and Chairman:

HARLOW SHAPLEY

Finance Committee:

JEROME C. HUNSAKER — RALPH E. FREEMAN
HENRY P. KENDALL — JOHN F. EBERSOLE

Rumford Committee:

NORTON A. KENT, *Chairman*

PERCY W. BRIDGMAN — GEORGE R. HARRISON
HARRY M. GOODWIN — ROBERT B. LINDSAY
HARLOW SHAPLEY — FRANCIS O. SCHMITT

C. M. Warren Committee:

FREDERICK G. KEYES, *Chairman*

GREGORY P. BAXTER — GRINNELL JONES
WALTER L. JENNINGS — AVERY A. MORTON
CHARLES A. KRAUS — WALTER C. SCHUMB

Committee of Publication:

ROBERT P. BLAKE, *Chairman, ex officio*
EDWIN C. KEMBLE, of Class I
RALPH H. WETMORE, of Class II
ARTHUR H. COLE, of Class III
ROBERT P. CASEY, of Class IV

Committee on the Library:

FREDERICK H. PRATT, *Chairman, ex officio*
RAYMOND C. ARCHIBALD, of Class I
THOMAS BARBOUR, of Class II
FRANCIS N. BALCH, of Class III
HENRY B. WASHBURN, of Class IV

Auditing Committee:

ERWIN H. SCHELL — ALEXANDER FORBES

House Committee:

CHARLES M. SPOFFORD, *Chairman*
H. ADDINGTON BRUCE — ROBERT P. BIGELOW
DONALD S. TUCKER

Committee on Biographical Notices:

Three Years

ABBOTT P. USHER, *Chairman*
LEIGH HOADLEY

Committee on Meetings:

THE PRESIDENT
THE RECORDING SECRETARY
LEONARD CARMICHAEL — JEROME D. GREENE
ABBOTT P. USHER — FREDERICK K. MORRIS

The Corresponding Secretary announced that the following had been elected members of the Academy:

FELLOWS

CLASS I

Section 1. Saunders MacLane, Cambridge
John von Neumann, Princeton, N. J.
Section 2. Ronold Wyeth Percival King, Winchester
Section 3. Isadore Amdur, Cambridge
Linus Carl Pauling, Pasadena, Cal.
Edgar Bright Wilson, Jr., Cambridge
Section 4. Arthur Robert von Hippel, Weston
Richard von Mises, Cambridge
Karl Terzaghi, Winchester

CLASS II

Section 1. Columbus O'Donnell Iselin, II, Woods Hole
Harald Ulrik Sverdrup, La Jolla, Cal.
Section 2. Paul Rupert Gast, Petersham
Hugh Miller Raup, Jamaica Plain
Albert Charles Smith, Jamaica Plain
Section 3. Eugene Markley Landis, Brookline

Section 4. Maxwell Finland, Boston
William Malamud, Worcester
George Widmer Thorn, Cambridge

CLASS III

Section 2. Vera Micheles Dean, New York, N. Y.
Carl Joachim Friedrich, Concord
Sarah Wambaugh, Cambridge
Section 3. Douglass Vincent Brown, Brookline
Section 4. Adolf Augustus Berle, Jr., Washington, D. C.
Raymond Blaine Fosdick, New York, N. Y.
Ernest Martin Hopkins, Hanover, N. H.
James Rhyne Killian, Jr., Wellesley Hills
Beardsley Ruml, New York, N. Y.
Leverett Saltonstall, Chestnut Hill
Charles Edward Wilson, New York, N. Y.

CLASS IV

Section 2. William Bell Dinsmoor, New York, N. Y.
Clyde Kay Maben Kluckhohn, Cambridge
Ambrose Lansing, New York, N. Y.
Section 3. Henry Grattan Doyle, Washington, D. C.
Elias Avery Lowe, Princeton, N. J.
La Rue Van Hook, New York, N. Y.
Section 4. Walter Gropius, Lincoln
Charles Rufus Morey, Princeton, N. J.
Karl Vietor, Cambridge
Herbert Eustis Winlock, New York, N. Y.

FOREIGN HONORARY MEMBERS

CLASS II

Section 1. Ezequiel Ordoñez, Mexico, D. F.

CLASS III

Section 1. Victor Andrés Belaúnde, Lima, Peru
Section 3. Daniel Cosío Villegas, Mexico, D. F.

CLASS IV

Section 3. Amado Alonso, Buenos Aires, Argentina

The following communication was presented:

Sarah Wambaugh: "The Place of the Small State in Organization for Peace."

Dr. Francis O. Schmitt exhibited a selection of electron microscope pictures of biological specimens.

The meeting was dissolved at 10.35 P. M.

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FRANCIS GREENLEAF ALLINSON
(1856–1931)

Fellow in Class III, Section 2, 1914

Francis Greenleaf Allinson was born at Burlington, N. J., Dec. 16, 1856 and died at his summer home, Hancock Point, Me., June 23, 1931. He was a son of the Quakers, William James and Rebecca Webb (Hinchman) Allinson, and a great-great-grandson of Joseph Allinson who came from Yorkshire, England to Burlington in 1718. His father, a drug merchant and for many years the editor of *The Friends Review* of Philadelphia, was a close personal friend of the poet Whittier in anti-slavery times, and the son Francis was given the poet's middle name. Less than six months later Whittier published a poem, "My namesake."[1]

Francis entered Haverford College and graduated A.B. in 1876 and A.M. in 1879. After a year at Harvard he received the degree of A.B. there also in 1877. He then had the wonderful experience of spending three years as fellow in Greek at The Johns Hopkins University in part of the most glorious period of its history, and became a pupil of the great Gildersleeve. When the University was opened in 1876 President Gilman assigned Gildersleeve to an empty room and told him to "radiate." The effect of this radiation in Allinson's case was magical, and after a distinguished career he was naturally selected as Gildersleeve's biographer by the editors of the *Dictionary of American Biography*. He received his Ph.D. at Johns Hopkins in 1880 for a dissertation "On Ionic forms in the second century" (*Amer. Jl. Philol.*, v. 7).

He was successively assistant professor of Latin and Greek at Haverford College (1880–82), headmaster of classics at the University School for Boys, Baltimore, Md. (1882–91), and associate professor of Greek and Latin at Williams College (1892–95). In 1895 he joined the faculty of Brown University as associate professor of Greek and classical philology. He became the professor of classical philology (1898–1915), and was professor of Greek literature and history from 1915 until his retirement as professor emeritus in 1928. During 1910–11 he represented Brown University as the professor at the American School of Classical Studies in Athens, and for many years he served as a member of the managing committee of that School. During the last five months of 1917 he was Sather lecturer on classical literature at the University of California.

Allinson's many articles, biographical sketches and reviews are to be found in such periodicals as *American Journal of Philology, Classical Journal, Classical Philology, Classical Weekly, Education, Transactions and Proceedings* of the American Philological Association, *Harvard Studies in Classical Philology, The Review* (N. Y.), *Nation, Century Magazine, The Brown Magazine, Brown Alumni Monthly, Haverfordian*, and *Quaker Alumnus*, Philadelphia. Allinson was an ideal writer of reviews, where his wide knowledge and keen sense of humor were often in evidence. He contributed also to the *Studies in Honor of Basil Lanneau Gildersleeve* (1902), to the *Goodwin Volume of Harvard Studies in Classical Philology* (1901), and the articles on "Albert Harkness" and "John Larkin Lincoln," to the *Dictionary of National Biography*.

His first book was *Rules of Latin Syntax* (Baltimore, 1883) and his second book, *Greek Prose Composition*, went through three editions (Boston, 1890–95). Allinson was long a student and lover of the witty Lucian and brought out a school edition (1905) of *Selections* from his writings. Then in 1926 his *Lucian—Satirist and Artist* appeared in "Our Debt to Greece and Rome" series. Admirable features, as well as defects, in this work have been set forth by L. E. Lord (*Classical Journal*, v. 23, 1928, p. 548–549) and by A. S. Owen (*Classical Review*, v. 41, 1927, p. 179).

Perhaps Allinson's most important contribution to scholarship was his edition of the principal fragments of *Menander* for the Loeb Classical Library (1921). It summarized all of his work in this field. No other classical author was previously so inaccessible to the student of Roman comedy in an English edition as Menander, but here the modern problem was not only to prepare

[1] This appeared in *Harpers Weekly*, May 13, 1857, vol. 1, p. 323; there are 42 stanzas with four lines in each stanza. *The Friends Review* for June 27, 1857, contains "To J. Greenleaf Whittier. The namesake's response," signed "Greenleaf." This was unquestionably written by the father.

a definitive text, but also translation and commentary. The result was a worthy addition to the Loeb series by one of the best living authorities on Menander.

Professor Allinson was twice married,—first, in 1885, to Mary Irwin Carey of Baltimore, who died in 1901 leaving one daughter; and second, in 1905, to Anne Crosby, daughter of Lucilius Alonzo Emery, chief justice of the supreme court of the state of Maine. The second Mrs. Allinson was also a classical scholar and a remarkable woman of great intellectual brilliance. She was dean of women and assistant professor of classical philology at the University of Wisconsin 1892–1900 and dean of the Women's College at Brown University 1900–1905. Besides being the author of a number of books and articles of her own, she collaborated with her husband in *Greek Lands and Letters* (1909) of which there were later editions in 1922 and 1931. They edited also an edition of John Conington's English translation of Virgil's Aeneid (Chicago, 1916, 1923).

Their home was a recognized center of friendly discussion and intellectual interchange, and their brilliant and witty conversation was a source of exhiliration to every visitor. Professor Allinson possessed something of the delicacy of the Hellenic attitude which seemed to influence his manner and way of thinking. He was ever courteous and considerate though he could be vehement in his criticisms of policies and tendencies he did not approve. He wrote of Gildersleeve, "As in his more personal teaching, where a 'mistake' was a 'crime,' so in the wider sweep of his seminary courses an ineluctable exactitude prevailed. No vagueness was acceptable." Every word of this might also be applied to Allinson. He was a very inspiring teacher. He taught his students to form definite opinions. Enthusiasm, great stores of learning at instant command, humor, delight in the specially happy phrase of a translation, and breadth of view which recognized the great importance of fields of knowledge unrelated to his own, made every class-room meeting stimulating.

He was much sought as a lecturer and as a reader of his translations from the Greek. For example, at Brown University in 1917 his subjects were, "Aeschylus: seven against Thebes,—national patriotism"; "Plato: Republic, the universal commonwealth"; "The Greek anthology: selected epigrams,—from Greek democracy to Byzantine imperialism." Similarly in 1920, "Selections from Lucian, films from a second century kodak"; "The Eumenides—The construction of conscience." Of his many other lectures we may refer simply to his Phi Beta Kappa oration on "Daedalus" at Smith College in 1928.

Among other expressions of recognition of his eminence, we may note his election as a fellow of this Academy (1914), as president of the American Philological Association (1921–22), his repeated election as Trustee of the Providence Public Library (1904–31), his receipt of honorary degrees, Litt.D. conferred by the University of Wisconsin (1922) and also by Trinity College (1922), and LL.D. by Haverford College (1931).

He was a graceful writer and a sparkling satirist, fastidious in his criticism and generous in his praise. Unassuming by instinct Professor Allinson left his mark of sincerity and genuineness upon a broad circle of acquaintances. One may appropriately close with Allinson's own translation of six lines of Schiller's "Die Ideale" rehearsing the two elements, "friendship" and "creative work" which had given most value to the poet's life, as well as to his own. "The closing lines," writes Allinson, "have always seemed to me the perfect picture of the scholar's ideal, however conscious he may be that he falls short of the goal."

> Creative work that resteth never
> That ne'er destroys, but through *slow* ages
> Still adding grain to grain, forever
> Eternity's vast structure rears
> Yet from the debt on Time's great pages
> Doth cancel minutes, days and years.

R. C. ARCHIBALD

CHARLES BARROIS (1851–1939)

Foreign Honorary Member in Class II, Section I (1915) 1919

Professor Charles Barrois, of Lille, for half a century eminent among the geologists of Europe, was one of the ablest and most illustrious investigators and teachers in the field of the earth sciences that France has produced.

Born at Lille, on April 21, 1851, into one of the great industrial families of northern France, Charles Barrois chose to use his energy and talent in scientific work, rather than in business. When twenty years of age he decided to become a geologist. A few years later he became assistant to Professor Jules Gosselet in the Department of Geology which had just been organized at the University of Lille. He soon began to publish on a variety of geological and paleontological subjects. In one of his earlier papers, for which he was awarded a doctorate of science at the Sorbonne, he made a very useful correlation of the Upper Cretaceous faunal zones of England and Ireland with those of France which has stood the test of time and helped to establish his reputation for careful and thorough stratigraphic work.

During his long and active life more than 150 papers, some of them memoirs of great scientific value, flowed from his pen. They dealt with many branches of the earth sciences—invertebrate and vertebrate paleontology, Cambrian to Quaternary stratigraphy, structural and areal geology, petrology, seismology, and economic geology. Most of them were based on studies of the rocks and fossils of France, but some of the most important of them related to the stratigraphy and paleontology of Spain, and Great Britain. Many of them were descriptions of the geology of areas covered by sheets of the Carte Géologique de la France, which were prepared for, and published by, the Geological Survey of France. The majority of these areas were in Normandy and Brittany, and some of Barrois' most important contributions to science related to the geology and paleontology of those provinces.

But Charles Barrois will be best remembered for his studies of the coal fields of the Nord and of Pas-de-Calais and for the great collection of rocks and fossils from the Carboniferous strata of those regions, and of models showing the geological structure of those beds, which he placed in the Musée Houiller of the University of Lille. He had been largely responsible for the establishment of this museum in 1908. In 1902 he had been made head of the Department of Geology of the University, and the museum will remain as a monument to the work which he did to make that department known throughout the world as a center for teaching and research on the geology and paleontology of coal.

The high quality of Barrois' scientific work was widely recognized by his contemporaries. He was a Commander of the Legion of Honor, a member of the Academy of Sciences of Paris and at one time its president, a foreign member of the Royal Society of London and of the Royal Society of Edinburgh, a member of the Pontifical Academy, a foreign fellow of the Geological Society of London, a foreign correspondent of the Geological Society of America and a foreign member of societies and academies in Belgium, Germany and Spain.

Professor Barrois died on November fifth, 1939, at the age of ninety-one. He is buried in Lille, where he labored so effectively in his chosen field for almost seventy years.

B. F. Howell

CHARLES VALUE CHAPIN (1856–1941)

Fellow in Class II, Section 4, 1914

Dr. Charles Value Chapin, who was born in Providence, Rhode Island, on January 17, 1856, died at his home on Keene Street, Providence, on January 31, 1941, at the age of 85, having been in failing health for about two years.

During his forty-eight years as Superintendent of Health in Providence, Dr. Chapin revolutionized theories of public hygiene and made many contributions to the field of medical knowledge which gained him worldwide renown. Dr. Chapin's theory of "the person, not the thing," advanced early in his career here, combatted the then generally accepted theory that germs of disease were communicated from one person to another through the air and in various ways. He expressed the belief that disease was mostly communicated through personal contact, and that if a person who cared for another having a communicable disease were to wash his hands thoroughly after coming in contact with the patient or touching anything handled by the diseased person, he would run but little danger. When this theory was first publicly expounded by him it was greeted with derision. The experiment was watched with interest and proved entirely successful.

Some of the accomplishments in Providence

during Dr. Chapin's administration were listed in a survey report by the American Public Health Association. It was pointed out that Providence was the first city in the United States to establish, in 1888, a municipal laboratory; it was in Providence that, in 1893, the first experiments in filtering water by mechanical filtration were made; Providence was the first city to discontinue, in 1905, fumigation as a form of terminal disinfection in the prophylaxis of contagious disease.

Dr. Chapin's outstanding contributions to the advancement of public hygiene were widely recognized during his long term of service as Superintendent of Health, and in retirement he was the recipient of many honors. Dr. Chapin took office when the department consisted of the head and one assistant, an ex-policeman. When he retired, he was head of a large corps of health workers and had supervised the building and development of the Providence City Hospital, the name of which was shortly changed to the Charles V. Chapin Hospital.

In 1909, Dr. Chapin, already recognized as an authority on public health work, accepted an invitation to deliver a series of lectures in the Harvard Medical School, and the treatises he there expounded were printed for wide distribution. For several years he also delivered an annual series of lectures at the Harvard-Massachusetts Institute of Technology School for Health Officers. In 1910 he published "Sources and Modes of Infection," which today is used as a textbook in medical schools. In 1913, Dr. Chapin undertook for the American Medical Association a survey of "State Sanitation" throughout the United States. His report of this survey submitted to and published by the Association, was declared a monumental work. In 1917 he was appointed one of a committee of ten eminent health experts by the National Red Cross War Council to advise on war relief and health work in Europe. In 1935 he was officially lauded by the hygiene section of the League of Nations for "revolutionizing the principles of disinfection following contagious diseases." In 1927 Yale University conferred upon Dr. Chapin the honorary degree of Doctor of Laws, and in 1928, in the presence of members of the National Academy of Sciences in Washington, he was presented the Marcellus Hartley medal for eminence in the application of science to the public welfare. Dr. Chapin was one of eight men in the world upon whom this honor has ever been conferred.

An award which was perhaps the greatest honor to be conferred on Dr. Chapin during his lifetime came to him in April, 1930, when the American Public Health Association presented him with the Sedgwick Medal, the greatest tribute within the gift of his contemporaries throughout all of North America.

In 1935, on the 59th anniversary of his graduation from Brown, the University conferred on him the Susan Colver Rosenberger Medal, the highest honor it can give an alumnus in recognition of distinguished service to humanity.

In the passing of Dr. Chapin, this country has lost one of its greatest benefactors, and Providence one of its most outstanding citizens. What he taught will live as the work of the highest type of public servant, having the welfare of his fellow men his first interest.

ARTHUR H. RUGGLES

JAMES PYLE WICKERSHAM CRAWFORD
(1882–1939)

Fellow in Class IV, Section 3, 1938

The University of Pennsylvania's distinguished Hispanic scholar Professor James Pyle Wickersham Crawford, was born in Lancaster, Pa., February 19, 1882, died September 22, 1939.

From a serious breakdown suffered in 1931 he had rallied—thanks to his invincible courage and the devoted care of his wife—to a degree that enabled him to carry on a large part of his University work. His death occurred shortly after a homeward voyage from Europe at the outbreak of the war.

After graduating from the University of Pennsylvania at twenty, he spent two years in its Graduate School, guided in his chosen field of Spanish studies by the late eminent Professor Hugo Albert Rennert. Two further years he spent in study at the Universities of Madrid, Freiburg and Grenoble. On receiving the Ph.D. degree, he started his long and honorable career at his own University.

In him were happily united the sound scholar

and the dynamic teacher. He won the respect of his students for his learning and critical insight, their admiration for the joyous energy of his personality, and their gratitude for his helpfulness.

To the field of Spanish drama and poetry of the sixteenth century he contributed these outstanding books: *Life and Works of Cristóbal Suárez de Figueroa; The Spanish Pastoral Drama;* and *Spanish Drama before Lope de Vega;* all of these published by the University of Pennsylvania; the first also appeared in a Spanish translation published at Valladolid.

The list of his articles and reviews in learned periodicals here and abroad is extensive; besides which he prepared valuable school editions of various Spanish works of fiction, as well as widely-used school text-books of Spanish grammar and composition. As an editor, he was in charge of *The Modern Language Journal* from 1922 to 1926; and from 1933 to his death he was editor of the quarterly *Hispanic Review,* the publication of which by the University of Pennsylvania Press he had planned in 1930. The January 1940 number of this periodical contains a complete, classified bibliography of Professor Crawford's writings.

Besides the American Academy of Arts and Sciences, Professor Crawford was a member of the following societies: Phi Beta Kappa, the American Association of Teachers of Spanish, the Modern Language Association of America, the Linguistic Society of America, the American Philosophical Society, and the Medieval Academy of America; and a corresponding member of the Real Academia Española, the Hispanic Society of America, the Real Academia Hispano-Americana de Ciencias y Artes de Cádiz, and the Academia de Bellas Artes de Valladolid.

Franklin and Marshall College conferred upon him the honorary degree of Doctor of Letters in 1925.

GEORGE BENSON WESTON

WILLIAM SUDDARDS FRANKLIN
(1863–1930)

Fellow in Class I, Section 2, 1919

William Suddards Franklin was born at Geary City, Kansas, October 27, 1863, son of Thomas Henry and Cynthia Ann (Curtis) Franklin. The father was born in Philadelphia to Edward Franklin from the east shore of Maryland and Mary (Franklin) Franklin from New England; the mother was a Missouri girl. The father, a graduate of Central High School in Philadelphia, went to Kansas in 1857 to build and operate a sawmill for a Philadelphia firm. There were five children: Edward Curtis (who became professor of chemistry, Leland Stanford Jr., University, and member of the National Academy of Sciences and of this Academy), William and his twin sister Nellie, Joseph who died at 15, and Thomas Z. (with Aetna Life Insurance Co., Hartford); a high degree of ability marked them all, with William probably the ablest.

W. S. Franklin was graduated B.S. at the University of Kansas in 1887 and M.S. there in 1888. He so early showed exceptional ability in mathematics and physics that he became an instructor in physics in his second undergraduate year; following his graduation he served three years as assistant professor of physics. For the year 1890–91 he studied at the University of Berlin with Helmholz, Planck and Kundt, and during 1891–92 was Morgan Fellow at Harvard University. While professor of physics and electrical engineering at Iowa State College 1892–97, he studied further at Cornell University from which he received the degree Sc.D. in 1901. He was professor of physics and electrical engineering at Lehigh University 1897–1903 and professor of physics 1903–15; subsequently he was lecturer in physics at Columbia University (1915–17), lecturer and professor of physics at Massachusetts Institute of Technology (1917–29), lecturer at Harvard (1917–25), and visiting professor at Rollins College from 1929 till his death.

On May 14, 1888 Franklin married Hattie Fenn (daughter of Franklin Stiles) Titus of Washington, Conn. They had two sons, Curtis Titus and Vernon Lyman Kellogg Franklin. All these members of his family survived him. He died in Wilmington, N. C., on June 6, 1930, as a result of an automobile accident.

In addition to his life of teaching Franklin served engagements as consulting engineer to the General Electric Co. and other companies, and was engaged at the Bureau of Standards on war work. He had a national reputation as an elec-

trical engineer and was an authority on alternating currents. He read constantly and widely in all branches of physics and engineering and was sympathetic to the newer theories of relativity and of quanta which came along during his maturer years. Though many thought of him as only an undergraduate teacher and writer of text books he had a considerable record of published research, great originality of mind, and his advice was always available to and highly valued by graduate students and younger scientists. The especial force of Franklin whether as productive physicist or engineer, as author of text books, or as teacher lay in his sense of reality—the world was vividly real to him and he wanted it to be so to others.

It was probably this keen sense of reality and vivid interest in persons, as well as in ideas and in things, which led him to slacken his scientific research in favor of teaching and research in teaching and further led led him to find an avocation in child welfare and in the development of outdoor recreational facilities for the young. One who had so keenly enjoyed the fishing, swimming, tramping in Western plain and mountain wished to see that so much as might should be provided for those who spent their youth in spaces less open. It was in connection with these interests that he wrote "Bill's School and Mine" and "Tramp Trips through the Rockies," and probably no scientific honor that could have come to him would have so touched him as did Bethlehem's action in naming Franklin Park in his honor.

Franklin was fellow of the American Association for the Advancement of Science (former vice-president and chairman of the section of physics), member of the American Institute of Electrical Engineers, American Physical Society, Kansas Academy of Sciences (honorary), Iowa Academy of Sciences (former president), Phi Beta Kappa, Sigma Xi, Tau Beta Pi and Phi Delta Theta. He received (posthumously) the first award by the American Association of Physics Teachers of its medal in recognition of preëminent contributions to the teaching of physics. He was elected Fellow of this Academy in 1919, member of the Council 1921–25, Chairman of the publication Committee and Editor, 1925–39. The generosity with which he gave his time to the Academy as an officer and the liveliness of his discussion of papers presented at the meetings merit especial mention here. He was always and in every capacity so thoroughly generous, alive and vivid!

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EDWIN B. WILSON

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LOUIS JOHN GILLESPIE
(1886–1941)

Fellow in Class I, Section 3, 1928

Louis John Gillespie* was distinguished for the great variety of fields in which he was interested and in which he made valuable contributions, and for the breadth of vision he derived from his diverse interests. He was born at Hillsboro Bridge, New Hampshire, on June 10, 1886, the son of John Joseph and Luella (Walker) Gillespie.

In 1911 he married Elsie Vaughn Jenney. She and their two children, Louis J. Gillespie and Marguerite Gillespie Greenlie, survive him.

He received his education in the schools of Manchester, New Hampshire, and at Brown University, where he specialized in physics and chemistry as an undergraduate, and in biology as a graduate student. He received the Ph.B. degree from Brown in 1908 and the M.A. and Ph.D. degrees in 1911. During part of his graduate course he was Assistant to Professor Barus in the Physics Department.

From 1911 to 1913 he held a Fellowship in Biology in the Hospital of the Rockefeller Institute for Medical Research. In 1913 he became Bacteriologist with the New York City Board of Health, and subsequently Scientist in the Bureau of Soils of the United States Department of Agriculture in Washington. In 1915 he became Biochemist in the Bureau of Plant Industry of that Department. He was Professor of Physical

* See the sketch by J. A. Beattie, Nucleus, *18*, 205 (1941).

Chemistry at Syracuse University during 1919 and 1920. In 1920 he came to the Massachusetts Institute of Technology as Assistant Professor of Physico-Chemical Research. He advanced to Associate Professor in 1926 and to Professor in 1931.

He was born with a keen ear, absolute pitch, facility with musical instruments and a great love for music. As a boy he learned to play the violin, piano, trumpet and trombone, and he earned most of his college expenses by the use of his musical ability. Although he never played professionally after graduation, he was actively interested in music all his life. He learned to play the cello and the viola, and for a short time he played the cello in one orchestra, the viola in another, and the trombone in a third. He composed a score of short piano pieces, two string quartets and a symphony. He was also greatly interested in the physics of music, especially as it related to the tone color and quality of musical instruments, and to those musical intervals which give esthetic satisfaction.

His first publications, from Brown University, dealt with the application of precise physico-chemical measurements to biological problems. At the Rockefeller Institute he shared in the pioneer work of characterizing the different types of pneumococci. At the Department of Agriculture he returned to the application of physico-chemical technique and reasoning to biology in the development of methods for measuring hydrogen-ion potentials and reducing potentials, particularly in soils. He pioneered in educating the biological and agricultural chemists to distinguish between these two potentials, and between them and the quantities of acid and reducing agents.

At the Massachusetts Institute of Technology his biological interests were continued in a course in physical chemistry for students of biology and in the text book "Physical Chemistry," which he wrote for it. He also developed a graduate course in thermodynamics, which was largely an exposition of Gibbs' original papers. His research was mostly in thermodynamics, including studies of calorimetry, solid-gas equilibria, and the effect of pressure on chemical equilibria in non-ideal gases. His research, like his music, was strongly individualistic. Neither the problem chosen nor the methods of attack followed the fashion, but both reflected the breadth of his vision. His studies of thermal diffusion were very timely on account of the widespread interest in the separation of isotopes by this method. Yet his own chief interest was in solving the difficulties which he had brought to light before the subject became popular, his approach was unusual, and his publication was unhurried. His researches are published in more than fifty scientific articles.

Important as were the direct results of these varied activities, the effect on his own development was perhaps fully as important. He was a teacher and a guide whose broad knowledge, wide perspective and keen judgment were always at the service of his students and colleagues. He contributed much by doing, even more by being.

GEORGE SCATCHARD

WILLIAM ARTHUR HEIDEL
(1868–1941)

Fellow in Class IV, Section 1, 1910

William Arthur Heidel was born in Burlington, Iowa, in 1868, and died in Middletown, Connecticut on January 15, 1941, in his seventy-third year. A graduate of Central Wesleyan College he proceeded for graduate instruction in the classics to the university of Berlin. Here he was fortunate enough to receive the personal instruction and friendship of Professors Zeller and Diels who inspired him to undertake for his life work the study of ancient Greek philosophy. After a two-year sojourn abroad, he returned to this country to complete his work for the doctorate at the University of Chicago, then still a very young university, under the guidance of Professor Shorey. It was here also that his long friendship with Professor John Dewey began. One of the earliest philosophical books, in part written and wholly edited, by John Dewey, *Studies in Logical Theory*, contains an article by Professor Heidel on The Logic of the Pre-Socratic Philosophy. While it was difficult for Professor Heidel to choose between a promising career in philosophy or in the classics—Professors Shorey and Dewey simultaneously offered him teaching posts at Chicago—he finally determined to devote himself to classical studies, but with particular reference

to pre-Socratic philosophy and science. It was in this field that he was to win singular distinction at home and abroad.

His first teaching appointments were in the Middle West; but from 1905 on he became professor of Greek at Wesleyan University in Middletown, Connecticut, where he continued to teach until 1928, when he was appointed a Research Associate of the American Council of Learned Societies to carry on his work on the History of Greek Thought. In 1938 he became Research Associate Emeritus.

Professor Heidel's carefulness in scholarship and his hostility to dogmatism kept him from hasty publication; but steadily important studies emerged from his pen that had been sometimes twenty years in the maturing. Some of the more important of these studies like his Περὶ φύσεως, *A Study of the Conception of Nature Among the Pre-Socratics* and his *Hecataeus and the Egyptian Priests in the Herodotus, Book II*, as well as many other smaller studies appeared either in the Proceedings or the Memoirs of the American Academy of Arts and Sciences. His scholarship was as carefully etched as was his miniature handwriting his friends came to know.

While he always stressed how meager was the evidence for much we should like to know in early Greek thought, his enthusiasm for new clues and new modes of approach always carried him forward. In later years it was the scientific theory and practice of the ancient Greeks, particularly of the followers of Hippocrates, that engrossed his attention. It is to be hoped that some of the important material he was working on when death overtook him can be published posthumously.

With all of Professor Heidel's great learning he was not a recluse: the life of the nation and of the world concerned him greatly. The range and accuracy of his knowledge on many subjects unrelated to the academic life never failed to surprise his friends. In late years his keen sense of justice and his great capacity for sympathy were often strained when he would hear, sometimes directly, of another great injustice done to a distinguished scholar abroad. While Professor Heidel's scholarly work was set in ancient Greece, truly his eyes surveyed the world.

CORNELIUS KRUSÉ

WILLIAM CASPAR GRAUSTEIN
(1888–1941)

Fellow in Class I, Section 1, 1924

William Caspar Graustein was born in Cambridge, Mass., November 15, 1888. He graduated from Harvard, Magna cum laude, in 1910. He spent the next year in the same place doing graduate work in mathematics; his main interest then, as ever afterwards, was in the field of geometry. For this reason it was entirely natural that he should spend the next two years in Bonn working with that distinguished, but highly individualistic geometer, Eduard Study. This was the beginning of an intimate personal and intellectual intimacy which lasted many years, and had a most profound effect on Graustein's whole scientific career.

He took the doctor's degree, Summa cum laude, in Bonn in 1913 and returned to Harvard for a year as instructor in mathematics. He was then promoted to an assistant professorship in the newly formed Rice Institute in Houston, Texas. Here hs joined his Cambridge friend, Griffith Conrad Evans in building up, with the warm approval of President Edgar Odell Lovett, the most advanced mathematical centre south of Mason and Dixon's line. This lasted until the war.

He returned to Harvard in the autumn of 1919 to help in the congenial task of rehabilitating the Division of Mathematics, which in one year had lost three of its most valuable members through death and transfer. He worked mightily at this task till the day of his death, climbing steadily to the top of the academic ladder. He was chairman of the Division from 1932 to 1937, and Assistant Dean of the Faculty of Arts and Sciences from 1939 to 1941. But he served mathematics outside his own university as well. He was for many years one of the leading editors of the Transactions of the American Mathematical Society, and chairman of a very busy committee organizing a proposed International Mathematical Congress to be held in Cambridge in 1940. He was killed in a motor accident January 22, 1941.

Graustein's approach to mathematics was essentially the artistic one. He was never attracted to a new theory merely because it was

novel or bizarre. Neither did he take pleasure in extended mathematical elaborations the only apparent object of which is to show the writer's virtuosity. His object was to reach some definite mathematical truth by the most attractive road, and to state it as generally and as accurately as possible. His doctoral thesis dealt with a method of representing all points, real or complex, of a space curve, by two real surfaces of special type in a definite relation to one another. In subsequent years he published other papers on complex geometry, but the method of representation suggested to him more general problems connected with mapping of one surface on another especially when the tangent planes at corresponding points are parallel. The introduction of the absolute differential geometry, and tensor notation had a curious effect on him. He clearly saw the great increase in generality that came in this way, and he mastered the new technique. But he also was led to perceive resources in the older geometry that had been somewhat neglected before. In particular he stressed the advantages of so called invariant methods which are independent of the more or less fortuitous choice of parameter systems for determining elements. His paper, "Méthodes invariantes dans la géométrie infinitésimale des surfaces," was awarded a prize by the Belgian Academy of Sciences in 1929; an elaboration in English was delivered, by request, before the American Mathematical Society a year later and was published in their Bulletin in August 1930. The totality of his scientific papers, mostly in the field of differential geometry, amounts to some three dozen titles.

The quality which makes Graustein's papers excellent reading was manifest in his teaching, for he was a most admirable teacher, clear, painstaking and stimulating. He published three timely geometrical text-books, "Plane and Solid Analytic Geometry," with W. F. Osgood, 1921; "Introduction to Higher Geometry," 1930; "Differential Geometry," 1935. But no printed page could convey the real quality of the teacher or the man.

JULIAN L. COOLIDGE

SAMUEL HENSHAW (1852–1941)

Fellow in Class II, Section 3, 1889

Samuel Henshaw was born in Boston, January 29, 1852, and died in Cambridge, February 5, 1941. Of an old Boston family he was the son of Joseph Lyman Henshaw and Jane Paine Henshaw. He had a sister, Elizabeth Lyman Henshaw, who died October 24, 1926, and a brother, Joseph Putnam Bradlee Henshaw, who died October 11, 1930. Samuel Henshaw married Miss Annie Stanwood, April 28, 1886. She died March 12, 1900. Her death was a desperate blow that radically changed all his subsequent life.

Henshaw went to the Chauncy Hall School, and the Boston Latin School. He did not go to college, but received an Honorary A.M. from Harvard in 1903.

Henshaw was short in stature; but very strong. He had wonderful eyesight so that he could read the finest print and he never wore glasses, even in his old age. He had a very keen and critical mind in affairs and in his relations with men. This gave his judgment great weight with his associates. The keynotes of his character were his sensitiveness, his sense of fun, his personal integrity and his devotion to his work and his friends.

Primarily an entomologist, he had wide knowledge in other groups of animals, and his knowledge of scientific literature was both very great and very accurate. This helped him greatly in his editorial work which was very extensive throughout his active years. He was gifted with a singleness of purpose and an intense application to work that is rarely equalled.

All his life interested in natural history, he became a member of the Boston Society of Natural History in 1871. In 1876, I first find record of his working on the collection of insects in the Society. From that time on, until 1891, Henshaw was working at the Boston Society as assistant to Professor Alpheus Hyatt. While insects were his primary interest, he worked on various groups of invertebrates and vertebrates as well, and assisted Professor Hyatt greatly in preparing material for his courses in the Teacher's School of Science, a department of the Lowell Institute.

In 1892, Henshaw became Secretary and Librarian of the Boston Society of Natural History, which position he held until 1901, when he was succeeded by C. F. Batchelder, and a year later by Glover M. Allen.

In 1891–1898, Henshaw was part-time assistant in entomology at the Museum of Comparative Zoölogy, succeeding Dr. H. A. Hagen, who had retired on account of illness. From 1898–1903, he was assistant in entomology and librarian of the Museum of Comparative Zoölogy. From 1903–1911, he was Curator of that Museum, when his title was changed to Director, and this position he held until November, 1927, when he was succeeded by Dr. Thomas Barbour. From 1927, his title has been Director of the University Museums and of the Museum of Comparative Zoölogy, Emeritus.

Henshaw was a Fellow of the American Academy of Arts and Sciences, member of the American Society of Naturalists, and American Society of Zoölogists. He was one of the founders of the Cambridge Entomological Club, which started publishing Psyche in 1874, and for a time he edited that Journal,

While Secretary of the Boston Society of Natural History, he edited their publications and during at least a large part of his connection with the Museum of Comparative Zoölogy, he edited the publications of that institution. As an editor, he was most painstaking, careful and exact.

When I first knew Henshaw, he lived in Mercer Circle, Cambridge, and later I became his opposite neighbor in Fayerweather Street. He was essentially a gentleman of the old school, with all the refinement and courtesy that that term implies. This in spite of a "crust" that often hid his finer feelings. These finer feelings were expressed in his devotion to his close friends, especially Dr. H. A. Hagen, Mr. Samuel H. Scudder, and Dr. Henry P. Walcott, notably in the years of their invalidism. Among others to whom he gave his great loyalty and devoted interest were Professor Alphaeus Hyatt, Dr. George L. Goodale, Walter Faxon, and Mr. Alexander Agassiz. He frequently visited Dr. Goodale and after the latter's death he sent to his widow lilies of the valley every Christmas as long as she lived. His sympathy went out especially to children, whom he dearly loved and he entered into their joys with a spirit of comradeship that won their deep love and admiration. He planned with children trips to the circus, or a sleigh ride, or to the theatre, when he was the life of the party. He was very fond of animals as pets, especially dogs, and anyone who would abuse a dog roused his wrath. Personally very generous, he hated all meanness, sham, or hypocrisy with a violent detestation.

During his later years, when crippled by arthritis and much of a recluse, his close friends, Dr. Alfred M. Tozzer of the Peabody Museum, and Miss Gertrude A. Thurston, his former secretary at the Museum, gave him most devoted care.

Henshaw did not publish extensively and his principal publications were on insects. Dr. P. J. Darlington, Jr. of the Museum of Comparative Zoölogy kindly gave me a very complete list of his publications: 1885, List of the Coleoptera of America North of Mexico, Am. Entomological Soc., 161 pp., of which he published supplements in 1887, 1889 and 1895. He also published, 1889–1896, Bibliography of the more important contributions to American economic entomology in five parts, over 700 pages, Washington, U. S. Dept. of Agriculture, Division of Entomology, and in 1898, The entomological writings of George Henry Horn, Trans. Am. Entomological Soc., vol. 25 pp., XXV–LXXII. Besides these, he published some thirty other papers, mainly on insects, also obituary notices of his close friends, Dr. H. A. Hagen, Prof. Alpheus Hyatt, Roland Hayward and Walter Faxon, and as well his annual reports in the Museum of Comparative Zoölogy.

Besides his natural history work, Henshaw was essentially a bibliophile and did an immense amount in building up to completeness the libraries with which he was connected. In addition, he had been acquiring for long years a very extensive collection of Gilbert White's Natural History of Selborne. Many years ago he told me that he had over 100 editions of that work. Mr. Thomas Franklin Currier of the Widener Library at Harvard writes me: "I feel certain that nowhere else is there gathered together so complete and comprehensive a collection of materials relating to the author of the Natural History of Selborne, embracing not only books and pamphlets, but manuscripts, prints, photographs . . . and Henshaw did not stop with mere collecting; he knew the inside of his books . . . A fairly complete scientific bibliography of White could

probably be made without going out of the Henshaw collection." This great White collection, with his other books and manuscripts, Henshaw in his will left to the Bodleian Library at Oxford, with the feeling that as an English work it most properly belonged there.

ROBERT T. JACKSON

FREDERICK LAWTON
(1852–1941)

Fellow in Class III, Section 1, 1921

Frederick Lawton, lawyer and judge, was born at Lowell, May 10, 1852, the son of James and Sarah (Priest) Lawton. He received his early education in the public schools of Lowell and graduated with the degree of A.B. from Harvard University in the class of 1874. Then followed a period of teaching, first at Chicopee, Mass. and later for three years as principal of the Brookline High School. He studied law in Lowell in the office of Charles F. Howe, Esq. and was admitted to the bar of Massachusetts in 1880. He then engaged in general practice in Lowell in association with his brother George F. Lawton, who was later for many years Judge of Probate for Middlesex County.

In the same year in which he began the practice of his profession Frederick Lawton married Helen Mack of Lowell, the daughter of a well-known business man and former mayor of that city. There are two sons of this marriage, Richard M. Lawton and John S. Lawton. The marriage was a preëminently happy one. Mrs. Lawton was a woman of high intellectual attainments. The Lawton home, first in Lowell, and later in Boston, to which city the family moved in 1908, became and continued for nearly forty years to be a center of attraction for many persons of culture and learning. Mr. Lawton in close collaboration with his wife developed wide interests in many fields of reading and study far remote from the confines of his profession. These were pursued continuously and systematically and were supplemented by frequent trips to Europe for which careful preparation was made by the study of the history and language of the countries to be visited.

Mr. Lawton's activities included three years in the State Senate as the representative of his Lowell district, beginning in 1893. He was a trustee of the Lowell Textile School and of Rogers Hall School in Lowell. He was interested in the Mechanics Association there. He was a member of the Harvard Club, of the Union Club, and of the St. Botolph Club in Boston.

In 1900 Governor Crane appointed him an Associate Justice of the Superior Court of Massachusetts. Upon his twenty-six years of service to the State in this high office rests his principal claim to public remembrance and gratitude. To the essential virtues of impartiality and unquestionable integrity Judge Lawton added the equally important virtue of unfailing devotion to duty. He was dignified in manner, rapid in the dispatch of business, quick and decisive in his rulings, and diligent and prompt in disposing of reserved cases. His charges to juries were clearly expressed and carefully adapted to the requirements of each case. Although he performed continuously for many years the arduous labor of hearing litigated cases he never fell a victim to the mental weariness and flagging of interest which after a time has lessened the usefulness of many capable judges. The strong sense of humor which made him an exquisite raconteur among his guests at home came to his aid on the bench and kept keen and active his interest in the human drama which was constantly unfolded in his court room. The beginning of each new day found him fresh and eager for whatever task it might bring. Another helpful characteristic was his liberal attitude of tolerance of the opinions of others which made him ready to listen to all arguments, even though he might be inclined to disagree with them, and to consider cases from all possible points of view.

It would be impossible to do more than to summarize in general terms Judge Lawton's work upon the great trial court of his native state. That court was one of general jurisdiction of actions at law, suits in equity and criminal prosecutions. Its work was growing rapidly during the period of his service upon it. When he took office there were eighteen justices. When he retired the number had increased to thirty-two. He carried at all times his full share of the burden. He sat as occasion required in all parts of the Commonwealth. He was everywhere a favorite with the clerks and officers who

served under him in his sessions. He was universally respected and trusted by the bar. He tried cases of all kinds from those involving ordinary commercial transactions and money interests to those involving divorce, contested wills, and murder. He tried both jury cases and cases without juries in which he determined both the facts and the law. The number of cases he heard would be counted in the thousands. His reputation grew steadily with the advance of years and accumulation of experience.

The death of Mrs. Lawton in 1919 was a great blow to Judge Lawton. Nevertheless he continued his work with unabated zeal, and his friends continued to find a cordial welcome and good company at his Boston apartment. Not only did his children keep in close touch with him at all times, but in addition a peculiarly intimate and comprehending relationship grew up between the judge and his grandchildren and their young friends who frequently visited him.

In 1926, at the age of seventy-four, he retired from the court while still in apparent good health. In 1930 he was again called to public service to succeed Judge Fessenden as the representative of the Superior Court on the Judicial Council, a permanent board established by law for the investigation of the judicial system and the recommendation of improvements in the administration of justice. For five years he regularly attended the meetings of the Council. Although it might, perhaps, have been expected that Judge Lawton would incline somewhat towards the conservative side on questions of change, it is said on good authority that he took a generally progressive position and that he was ready to throw his weight on the side of change whenever it seemed likely that good could be accomplished.

At length advancing years took their inevitable toll in declining strength. After a long illness Judge Lawton died at his Boston apartment on March 30, 1941. If he had lived a few weeks longer he would have been eighty-nine years of age. He will be remembered and honored chiefly for his long, faithful, and able service as a justice of the Superior Court, but by the survivors of those who were fortunate enough to be admitted to the inner circle of his home he will be remembered more intimately as a gracious host and a charming gentleman.

STANLEY E. QUA

HERBERT VINCENT NEAL
(1869–1940)

Fellow in Class II, Section 3, 1914

Herbert Vincent Neal, biologist and teacher, was born at Lewiston, Maine, on April 3, 1869. On February 21, 1940, he met accidental death on a Texas highway while driving from Mexico City to California. He is survived by his wife, Helen Phillips Howell of Southold, New York, to whom he was married on June 8, 1899, and by three children, Margaret and Helen (twins, born February 26, 1901) and John Howell (born July 13, 1906).

He received his bachelor's degree (A.B.) at Bates College in 1890 and during the next two years served as instructor in history and Latin at St. Paul's School, Garden City, New York. In 1892 he entered Harvard University as a graduate student in biology. His chief work was done in association with Professor Edward L. Mark. It resulted in a doctorate thesis (1896) entitled "The Segmentation of the Nervous System in Squalus acanthias: a Contribution to the Morphology of the Vertebrate Head," published in the Bulletin of the Museum of Comparative Zoology at Harvard College, volume 31, 1898. From Harvard University he received the following degrees: Bachelor of Arts in 1893, Master of Arts in 1894 and Doctor of Philosophy (in Zoology) in 1896.

After his four years at Harvard he spent a year (1896–97) in Europe continuing work on his doctorate problem, mainly at Munich in the laboratory of C. von Kupffer, an authority on the development of the head of vertebrates.

At the end of his year abroad, Neal returned to become Professor of Biology at Knox College, Galesburg, Illinois. Occupying this position for sixteen years, he became known as an unusually effective teacher and as a competent and constructive biologist. In 1913 he succeeded the late John Sterling Kingsley at Tufts College and served there as Professor of Zoology until his retirement in June, 1939. From 1924 to 1935 he also acted as Dean of the Graduate School.

He was Curator of the Barnum Museum of Tufts College. In 1931 the honorary degree of Doctor of Science was conferred upon him by Bates College.

Dr. Neal was actively associated with biological laboratories on the coast of Maine. He became assistant Director of the Harpswell Laboratory in 1908 and served as Director from 1913 to 1917. He became a trustee of the Mount Desert Island Biological Laboratory in 1921 and was Director from 1926 to 1932. His enthusiastic interest gained for these institutions much material assistance and helpful support. Also he was a member of the Corporation of the Marine Biological Laboratory at Woods Hole and of the Corporation of the Bermuda Biological Station for Research. He was a trustee of Bradford Junior College and of Bates College.

Neal's early scholarship is attested by his membership in Phi Beta Kappa and Sigma Xi. Later he acquired membership in the following societies: American Association for the Advancement of Science (Secretary of Section F, 1913–20), American Academy of Arts and Sciences, American Society of Naturalists, American Society of Zoologists (Secretary-Treasurer of Central Branch 1910–11; President of Society, 1930), Association of American Anatomists, Boston Society of Natural History, The Illinois Academy, The Russian National Academy of Science (Corresponding Member). As a Fellow of The American Academy of Arts and Sciences, he rendered important service for four and a half years (1929–34) as Editor and Chairman of the Committee of Publication of the Academy.

Some men are born teachers; others have teaching thrust upon them. It was Neal's genetic good fortune to possess those inherent peculiarities, intellectual and emotional, which enable one human mind to reflect truth into others. The brightness and clarity of his mind, its ability to discriminate between the vitally relevant and the unimportant, its keen appreciation of all that is implied by the complexity, inter-relation, continuity and progressive development in the living world made this reflection far more than a literal delineation of tangled reality. His mind focused deeply into that reality and projected a picture of an organic world whose overwhelming diversity and complexity were even exceeded by its evidences of order, harmonious adaptation, integration of smaller into greater living units, and something which has at least the external appearance of a persisting purpose. In all of his teaching the deductions from biology were brought to focus on the problems of the origin, nature and destiny of the human organism. His better students derived from lasting inspiration. Those who were incapable of seeing all that he put before them at least knew that there was something there and they admired and respected him. Although often heavily burdened with teaching responsibilities, he always gave to his students ungrudgingly of his time and energies. He could have done many other things but he always put the teaching first because he loved the doing of it and because he was deeply interested in the human beings who were his students. Many of them are now engaged in medical or other scientific work.

Neal's contribution to the science of biology is not to be measured by the number of titles of his published work. The list is not long. Its titles indicate his persisting interest in the subject which first attracted him—the perplexing problems presented by the segmental structure and arrangement of nervous and other organs in the head of vertebrates. His earlier papers constitute a substantial addition to our knowledge of the embryological facts and offer much toward the interpretation of them. Later papers deal with the embryonic origin of nervous elements. But it was in the direct impact of his forceful personality and invigorating teaching upon a continuous procession of students over a period of nearly a half century that he did his most important service to science.

Much of his time in the last few years of his life was given to the writing of books designed to serve as texts of somewhat advanced nature—a "Comparative Anatomy" (of vertebrates; 1936) and a "Chordate Anatomy" (1939), both with some collaboration from H. W. Rand of Harvard University. At the time of his death he had in nearly completely form the manuscript for a book which was intended to express his views concerning the biological origin and nature of man and which, it is to be hoped, will tell us much more than is widely known of the author's fine philoso-

phy of life. It is much to be desired that this manuscript should find early publication.

Neal's dominating concern with problems of human biology made it inevitable that his zoological interest should have centered on the vertebrate animals. It was highly appropriate, therefore, that in his position at Tufts College he should have succeeded John Sterling Kingsley, eminent for his work in the field of vertebrate comparative anatomy. To Kingsley's extensive knowledge and constructive research in anatomy, Neal added interpretation and philosophical insight.

From his student days onward it was evident that the detailed facts of biological structure and function were of interest to Neal chiefly as data which might yield some satisfaction to the common craving for an "explanation" or "interpretation" of "life" or might give us an answer to our query as to the "meaning" of life—if, indeed, it has any meaning. In 1934 he published a small book (87 pages) entitled "Vitalism and Mechanism—a Discussion." It consisted merely of letters exchanged, over a period of many years, between him and James F. Porter, a friend from graduate-student days. Porter, a business man of sensitive and artistic temperament and scientific interests, argues for mechanism. Neal's letters express vigorously his dissatisfaction with mechanism and his conviction that "by no hocus-pocus can mind be conjured out of matter."

Neal's philosophy is best judged by a philosopher. Tufts College, on April 21, 1940, held a memorial service for him. At this service his friend, William Ernest Hocking, referred to him as "a colleague in the teaching of philosophy" and spoke at some length concerning Neal's philosophy of biology. The following is quoted from Hocking's address. Speaking of the element of wonder as an accompaniment of scientific outlook—". . . Herbert Neal was a man to whom this element of wonder became an imperative. He saw that in the ideal of self-forgetfulness, which is part of the greatness of the scientific spirit, there lurked a danger that the scientist might *forget himself* as a part of that phenomenon which is to be understood. Consciousness, the capacity for pleasure and pain, the power of making judgments of good and evil, of right and wrong,—this extraordinary power of setting up an ideal of truth for truth's sake which is the very heart of the scientific code,—these powers are also products of the living universe. Evolution has produced marvelous organisms; but it has produced also something more marvelous,—organisms which are *aware of* marvelous organisms, and which can consider the whole complex history, debouching in themselves, and speculate about it. That Nature has produced the human body is a marvel; that it has produced the Thinker is more marvelous still."

"It was the peculiar insight of Herbert Neal that he could not forget, nor allow his students to forget, this double nature of the problem of evolution. Could Nature have produced the body without producing the mind? Could Nature have evolved the human body without evolving the human mind?" Never accepting naïve mechanism and finding a vitalism which invokes non-mechanical or "vitalistic" agencies equally inadequate, he believed that ". . . the answer had to be sought, not in any detail of the process, as if mind—hitherto absent from the universe—had one day *emerged*, as an incalculable new quality,—but in the character of the universe as a whole, which *never was* devoid of mentality and meaning. It is not for nothing that livingness is felt to be present in the whole." For Neal ". . . the presence of a living character in Nature as a whole was . . . *the reality*, the deepest reality with which we have to do . . .".

In addition to his philosophy of biology and life, but in every way consistent with it, Neal held a philosophy of human *living*. Of the former he was ever ready to talk and did so with characteristic eloquence and earnestness. Of the latter he rarely spoke; yet it was far better known to his associates than was the former because his daily living gave to it more vivid expression than could any words. He lived as one who had been privileged to spend a limited time in some enchanting country. No landscape, no adventure which that land afforded was to be missed. He therefore lived actively, intensely. His nearest approach to idleness was time spent in contemplation of the world's beauty. But it was not a foreign land in which he sojourned. He felt himself to be a part of a living universe. He therefore found the world altogether friendly. He saw in it meanness and evil and he hated them, but he

hated no human being. He had only compassion for the man in whom evil resided.

The breadth of his capacity for appreciation was extraordinary. The music of Bach he enjoyed, not as a duty but from the heart and he took pleasure in modern light music—of the better sort. His appreciation of Shakespeare was equalled by his delight in a Charlie Chaplin comedy. But the morbid sordid realism which some recent plays affect aroused his complete disgust. Emerging from a theater late one evening after seeing such a play, he said to the friend with him, "Now let us take a long walk in the cold clean air and under the starlight and get that out of our systems." He was to a surprising degree familiar with music, literature, painters and paintings. He was more than merely passively artistic. His water colors and his playing of the violin revealed capacities which might have been developed far if he had not chosen science. He traveled much, always with camera in hand. His collection of lantern slides, colored by himself, was the envy of professional photographers. The wonder is that he was able to do such a diversity of things and to do them all well.

Neal was loyal to his responsibilities as a citizen. He was always actively interested in social, civic and political affairs. He was not so academic that he could not serve a three-year term (1906–09) as alderman from the Sixth Ward of Galesburg, Illinois. In June, 1918, he volunteered for service under the Young Men's Christian Association in its work with the Italian army in the "World War." He was sent to Italy in August, 1918, and served there until August, 1919. From January to July, 1919, he was stationed at Genoa, acting as Regional Director. He held the rank of Captain in the Italian army.

Neal's joy in living radiated from him. All who knew him marveled at his spirit of eternal youthfulness. The gracious and generous hospitality of his home will always be remembered by his students and friends. If all men could live by Neal's philosophy, world wars would be replaced by world tolerance and world friendliness. Science and the arts would flourish. And each day of human living would mark some progress in the coöperative striving toward the realization of all that is finest and noblest in the potentialities of the human organism.

HERBERT W. RAND

ALFRED BARTON RENDLE
(1865–1938)

Foreign Honorary Member in Class II, Section 2

Alfred Barton Rendle was born in London, January 19, 1865, the eldest child and only son of John Samuel and Jane Wilson Rendle. He was educated at London schools and at St. John's College, Cambridge. There he came under the stimulating instruction of S. H. Vines. Probably he would have liked nothing better than to remain as a member of the school of research which Vines was then endeavoring to build up; but the latter's removal to Oxford put an end to any such hope. Rendle, in need of a position, applied for and got one as Assistant in Botany at the British Museum, left vacant by Ridley's transfer to Singapore.

Although the change from physiological investigation under Vines to the career of a taxonomist and museum official came about fortuitously, it was not made without conviction. Rendle had always been interested in classification and he proved a capable systematist in the British tradition. He steadily advanced in the Museum, becoming Keeper of Botany in 1906 and holding that post until his retirement in 1930.

He found time and energy for various activities outside his immediate duties. He served the Linnean Society as member of the Council, Botanical Secretary (1916–23), and President (1923–27). He took an active part in the work of the Royal Horticultural Society and was awarded two of its medals. For twelve years he was evening lecturer on botany at the Birkbeck Institute. He did much for the conservation of the native British flora. He took a lively interest in bibliography, no doubt fostered by long association with James Britten. I well remember the warmth with which he received a minor discovery of mine in that field:—as I remember the almost fatherly hospitality with which he saw to it that I, a first-time visitor to the Museum, should miss nothing to my pleasure or advantage.

No taxonomist of Rendle's time could escape questions and controversies in nomenclature; though said to have had no great liking for the

subject, he was very much concerned with it. He aided in drawing up the original International Rules of 1905, served on the editorial committee of successive congresses and became its head after Briquet's death. Following the Congress of 1905 he prepared, in collaboration with Britten, a list of British seed-plants and ferns in order to test the workings of the then new rules. Britten, a bibliographer rather than a practical taxonomist, inclined to the radical and uncompromising in matters of nomenclature; the list applied certain provisions of the rules not wisely, but too well. However, for that very reason it went far to bring about the formulation and prompt incorporation into the rules of the useful principle of illegitimate names.

An administrative officer of a museum must often sacrifice his own productivity to the duty of keeping its collections in condition for the use of others. The bulk of Rendle's published work is not great, and its direction was often determined by the immediate needs of the Museum. One major enterprise, the Flora of Jamaica, begun in 1910 in collaboration with William Fawcett, he initiated and carried well toward completion, five of its seven projected volumes have been published when he died. The work is in the tradition of the great series of British colonial floras; Rendle's future reputation will rest mainly upon it.

His one other large work—two volumes on the classification of flowering plants—sprang from his teaching. He believed in the educational usefulness of taxonomic botany—it required, he wrote, a minimum of apparatus and forced the student to systematize observed facts. Also, like many working taxonomists, he distrusted phylogenetic conjecture, none the less when it was his own. He maintained that "certainty of identification" was "more important than guesses at affinity, particularly by those with little knowledge of generic and specific differences."* Accordingly, his text-book is deliberately conservative, following the Eichlerian system closely, and makes little attempt at originality. Possibly for that reason, it holds a place among the standard works of its kind.

* Ramsbottom in Proc. Linn. Soc. London 150: pt. 4, p. 329.

Rendle was a regular attendant at scientific conventions, often in distant countries. He was taken ill while on his way to one of these, a meeting of the British Association in India late in 1937, and was brought home to die, January 11, 1938.

C. A. WEATHERBY

CHARLES WARDELL STILES
(1867–1941)

Fellow in Class II, Section 4, 1921

Dr. Charles Wardell Stiles, for many years in the U. S. Public Health Service, Washington, D. C., in which he became Medical Director prior to his retirement from active duty on October 1, 1931, died of myocarditis at the U. S. Marine Hospital, Baltimore, on January 24, 1941.

He was born in Spring Valley, N. Y., on May 15, 1867, and received his early education at Wesleyan University, Middletown, Connecticut, later studying at the Collège de France, the University of Berlin, the University of Leipzig, the Pasteur Institute, and the Trieste Zoölogical Station. He received his Ph.D. degree at the University of Leipzig in 1890, under the famous parasitologist, Leuckart, and was awarded a number of degrees in this country, including an honorary M.D. from the University College of Virginia, in 1913.

Dr. Stiles' professional career began in 1891, when he was placed in charge of the Zoölogical Laboratory of the Bureau of Animal Industry, U. S. Department of Agriculture. In 1902 he joined the U. S. Public Health Service, as zoölogist, becoming in turn professor of zoölogy, assistant surgeon, and finally medical director. From 1892 he gave lectures on medical zoölogy and held teaching positions in Georgetown University, the Army Medical School, Johns Hopkins University, and the Naval Medical School. Since 1931 he had been an associate of the Smithsonian Institution, and professor of zoölogy at the Rollins College, winter faculty, in Florida. He was a member of numerous American and foreign scientific and medical societies. In 1892 he was elected foreign correspondent, of the Société de Biologie, France; in 1896 foreign correspondent of the Académie de Médicine, France; and in 1899 corresponding member of the Zoölogical Society of London.

In addition Dr. Stiles was active in his fields as scientific secretary of the Rockefeller Commission for the eradication of hookworm, honorary custodian of the helminthological collections in the U. S. National Museum, secretary to the advisory commission of the Smithsonian Table at Naples Zoölogical Station, secretary of the International Commission on Medical Zoölogy, and secretary of the International Commission on Zoölogical Nomenclature. He served also, from 1895–1930, as U. S. delegate to international zoölogical congresses in Leiden, Cambridge, Berlin, Berne, Boston, Gratz, Monaco, Budapest, and Padua. His mental capacity for weighing the quasi-legal questions involved in taxonomic tangles, and his sound judgment in the formulation of international rules to govern nomenclatorial procedure made him invaluable in this field.

During 1898–1899 he was detailed by the Secretary of Agriculture as agricultural and scientific attaché to the U. S. Embassy at Berlin, and his report published in 1901, particularly the part relating to his investigations on trichinosis, furnished convincing and important data.

The subjects of his many publications relate chiefly to parasitology and to human and veterinary medicine, and include studies on parasitic protozoa, hookworm and rural sanitation, trematodes, cestodes, anthelmintics, surra, verminous diseases of cattle, classification of ticks, zoölogical classification, and many others. Perhaps he is best known for his recognition of hookworm disease as an important health problem in certain regions of the Southern States and for the demonstration here of a species distinct from the old-world hookworm. Other outstanding accomplishments of Dr. Stiles are the preparation of the Index-Catalogue of Medical and Veterinary Zoölogy (in collaboration with Dr. Albert Hassall), his Monographs, Bulletins, and the Key-Catalogue of the Parasites of Man and Animals, indexed in all the more important languages, and utilized the world over by parasitologists.

The thoroughness, accuracy, and high standard of Dr. Stiles' scientific investigations, his ability to analyze and evaluate data, to clearly and impartially present the facts, and his skill in deducing accurate conclusions, serve as an inspiration and guide to other workers in the field of parasitology.

E. E. Tyzzer

HENRY TABER (1860–1936)

Fellow in Class I, Section 1, 1891

Henry Taber was born at Staten Island, N. Y. on June 10, 1860 and died at Worcester, Mass. January 6, 1936; he is buried beside his wife in Princeton, Mass., on one of the high plateaus of Mount Wachusett. He was the eldest son of Charles Corey Taber, a cotton dealer and broker of New York city, and his wife Cornelia Frances Martin, of Flushing, L. I., and was a descendant of Philip Taber who came from Essex, England to Plymouth, Mass. in 1630.

Henry Taber entered Yale with the class of 1881; leaving college for a time on account of illness, however, he became a member of the class of 1882 in the second half of the junior year. He had been pursuing a course in mechanical engineering, but feeling that he was unfitted for this career he was permitted to substitute a special course in mathematics for part of the work. His membership in Berzelius and other Yale clubs was a source of great pleasure to him as he returned to reunions in later years.

The next three years were spent in graduate mathematical study under the great Sylvester, at the Johns Hopkins University where he was awarded the Ph.D. degree in 1888. After a year as an assistant he became a docent in mathematics at Clark University, then, as assistant professor (1892–1903) and professor (1903–21) he was an associate of Professor W. E. Story and very active in mathematical research. He retired as professor of mathematics emeritus in 1921.

Clark University was organized for strictly post-graduate study, and did not aspire to compete with other institutions in the work that is generally recognized as undergraduate. Thus a very distinguished group of scholars was assembled on its Faculty. But with the founding of the University of Chicago and a changed attitude of the founder of Clark, a staggering blow was dealt to the institution when many of its faculty, including the fine mathematician Oskar Bolza, decided to go to Chicago. Of the 24 candidates for the Ph.D. in mathematics, presented at Clark

by Professors Story and Taber during 1892–1917, five had worked under the direction of Doctor Taber, namely: E. R. Rettger, S. E. Slocum, R. B. Allen, J. A. Bullard, and S. Zeldin.

His chief mathematical interests were in the fields of matrices and bilinear forms, continuous groups, and hyper-complex numbers. More than thirty of his papers and memoirs were published in *Amer. Jl. Math.* (1890–1916); Amer. Acad. A. Sci., *Proc.* (1891–1913); Amer. Math. So. (a) *Bull.* (1894–97), (b) *Trans.* (1904); Int. Congress Mathems., Chicago, *Mathematical Papers* (1896); *Mathem. Annalen* (1895–1917); *Math. Reviews*, Story (1897); Paris, *Comptes Rendus* (1906).[1] Already in 1893 he was one of only eleven American mathematicians presenting papers at the International Congress of Mathematicians in Chicago. On the invitation of Professor Eduard Study, during sabbatic leave in 1906, he delivered a course of lectures on the theory of groups at the University of Bonn. In 1912 Dr. Taber was elected a vice-president of the American Mathematical Society. He became a fellow of this Academy in 1891.

He was married in 1886 to Fanny Lawrence of New York, who died in 1892; they had three daughters who are still living. Of Dr. Taber's brothers, Robert Schell Taber (1865–1904) was a famous actor (Julia Marlowe's first husband), and Edward Martin Taber (1863–1896) an eminent American landscape artist (see R. Cortissoz, *American Artists*, New York, 1923, and S. Isham, *American Painting*, New York, 1927). In appearance Dr. Taber bore such a strong resemblance to the English actor Sir Henry Irving that when he was in London, on being solicited for alms he was addressed as "Sir Henry." He was a member of the Quinsigamond Boat Club, of Worcester, and an excellent tennis player. His religious affiliations were Episcopalian. He had a wide range of interests, and a remarkable memory, and he read widely in other branches of science than his specialty, such as chemistry, physics, and medicine. But he was also a great student of history and anthropology, and took delight in literature, art, music, drama, and dancing (especially Pavlova's). He had a highly developed sense of humor, rejoiced in human contacts, and was ever ready to champion the cause of one whom he felt wronged. An old friend has written to me, "His genial, lighthearted, highstrung personality might easily give a stranger little impression of taking himself seriously. Life was to him what Shakespeare said it is, and his care was to act it beautifully."

R. C. ARCHIBALD

[1] Dr. Taber's complete Bibliography for the years 1890–97, and analyses of many of his papers, may be found in *Clark University 1889–1899. Decennial Celebration* (Worcester, Mass., 1889), p. 548–549, 73–83; and *Clark University . . . Report of the Presidents and Departments 1916*, p. 12–14. See also Yale University *Obituary Record for the years 1935–1936;* Yale University, *Twenty-fifth Reunion Book of the Class of 1882;* G. L. Randall, *Taber Genealogy. Descendants of Thomas son of Philip Taber*, New Bedford, Mass., 1924, p. 244, 382.

FRANK BURSLEY TAYLOR
(1860–1938)

Fellow in Class II, Section I, 1925

Frank Bursley Taylor was son of a leading lawyer of Fort Wayne, Indiana. His father was also a member of the Mississippi River Commission, and his stay at Harvard was co-eval with mine. It is not surprising that his attention was early called to Physiographic problems, so that when his health made indoor work harmful to him he took up with a background of training at Harvard the study of the old shore lines, that surround the Great Lakes and are well marked on Macinac Island, where he had a summer home, and from which he obtained his wife. They traced these shore lines together and in that work I first met him and gave him the first money he ever earned as a professional geologist. With the study of the shore lines it was natural for him to study the ice sheet and its recession upon which they depended for their origin. He became an authority and prepared the Niagara folio of the U. S. Geological Survey tracing the history of Niagara Falls. The origin of glaciation was linked with that of the origin of the earth by T. C. Chamberlin, and Taylor went on to consider the origins of the mountain ranges and this led to the so called Taylor-Wegener hypothesis relative to continental drift. On this he published some ten papers. He also thought a good deal about astronomy and the evolution of the Solar System and published a book. I append

letters from him to me of bibliographic interest. He was broad minded enough to change from time to time as he absorbed new facts and was good at drawing maps to illustrate his ideas.

As to his astronomic ideas it is only fair to him to quote from a letter to Leverett as well as to me appended and remark that the publication of the book was forced on him by a well-to-do father who wanted to file a caveat on what he considered his son's great ideas.

In the field connecting geology and cosmogony it is not surprising that his speculations like most others have not been accepted.

On April 24, 1899 he was married to Minnetta Amelia Ketchum who helped him in many ways.

Beside the American Academy he was a Fellow of the American Association for the Advancement of Science, of various local societies and a member and contributor to the Michigan Academy of Science and others.

His memorial as Fellow of the Geological Society of America which includes genealogical data and bibliography was prepared by Frank Leverett with whom he was intimately associated in his work in the Great Lakes region and its glacial and post-glacial geology, and appears in the Proceedings of the Geological Society of America for 1938, pp. 191–200. A shorter abstract appeared in Science, Aug. 5, 1938, p. 121–122, and there were besides the customary newspaper notices a tribute by Agnes Yarnell in the Fort Wayne News Tribune and editorials in the Ft. Wayne Gazette of June 16, and Journal of June 12, and the class memoirs prepared by John C. Merriam, H. U. 1886.

To Leverett's bibliography may be added a posthumous paper in the Scientific monthly (July 1939, Vol. xlix, pp. 49–56) "Geological story of the Great Lakes."

As he wrote to Leverett:

"I am quite free to admit that my efforts to point out the cause of continental crustal movements are largely speculative although I claim to have a few very strong evidences in my favor. But in gathering together the facts that show the character of the crustal movements, and their direction and amount of movement in the several continents I think I have followed much more sound and careful scientific methods."

A. C. LANE

Letters follow:

420 Downing Ave.
Fort Wayne, Ind.
Feb. 14, 1925.

Prof. Alfred C. Lane,
22 Arlington Street,
Cambridge, Mass.

My dear Lane:

Yours of Feb. 3 is received. It is rather funny that you should write just at this time and say the things that you do, for the thing you are after is not yet in existence, but you are just in time probably to get what you want. Here is a little story. The lines you read in the last Who's Who told a lie, thanks to the stubborn meanness of an editor and his advisors, and partly also to my own oversanguine expectations. More than three years ago I prepared two short papers, eleven typewritten pages each under the titles "The Great Satellites of the Giant Planets," and "The Growth of the Planetary System as Revealed in Its Vestiges." I did this in one more desperate effort to get my ideas into a form in which they would be received and published by some scientific journal. I was determined to do no more private printing, except as a last resort. These papers were still in the editor's hands when the last day of grace for Who's Who came. I felt sure the papers would be accepted, but—it simply was a case of counting the eggs before they were hatched. I was disgusted. In my sanguine expectations, I had sent the title in to Who's Who, and then the confounded egg didn't hatch.

Since then I have been working at other things, until a few months ago, when I took up these subjects once more. I think you know the awful struggle I have been thru in endeavoring to formulate my ideas and then to get some one to look at them earnestly and open mindedly. It is more than 40 years (Dec. 13, 1884) since I hit upon the idea of direct capture as the origin of satellites, and I soon extended it to planets. In July 1891, I started to print my ideas privately, but my plan was altogether too elaborate, and I went broke before I got to the real meat of the subject. It was miserable stuff, worse than nothing, and I have always been glad that the attempt failed.

In June, 1898, when my health seemed unusually threatening, I printed privately a little pam-

phlet of forty pages, a sort of caveat on my ideas, it is no account, excepting as a caveat. The astronomical part is as bad as my earlier attempt, but there are four pages in which I state for the first time my idea of the function of tidal and rotational forces in world-geology, in the making of continents, mountain ranges, etc. This little pamphlet is entitled "An Endogeneous Planetary System." I am sending you a copy herewith, with the geological passage marked. I sent out only three copies of this pamphlet to geologists, one each to Gilbert, McGee and Chamberlin at the time it was printed. About four years ago two copies were sent to non-professional friends, no others were ever sent out. It is a sort of precursor of my later papers on continents, mountain ranges etc. I think I sent you a copy of "Bearing of Tertiary Mountain Belt on the Origin of the Earth's Plan" 1910 long ago. I enclose also a copy of the abstract of my paper at Washington, April 18, 1923 entitled "The Lateral Migration of Land Masses." But if you wish my latest on this theme, see *Pan-American Geologist* for Feb. 1925. In the spring and summer following my father's terrible illness in Boston in Jan. and Feb. 1903, I wrote and printed privately, a book entitled "The Planetary System." This is a fugitive volume if ever there was one, but whether it is a fugitive from justice or from injustice, I have never been able to find out. It has pretty nearly everything it it, but is an awful mess.

About 1908, I began to try to find a way to discuss the growth of the Planetary system by inductive methods (in the Planetary System it was mainly deductive). After more than ten years of study and work, off and on, I produced a paper entitled "The Growth of the Planetary System as revealed in Its Vestiges" and in the Fall of 1920 I sent it to Prof. T. C. Chamberlin for the Journal of Geology. He had published many papers of his own on the same general theme, but he refused mine. Mine, he said, was too astronomical; he advised me to send it to the Astro-physical Journ. (Prof. E. B. Frost, Editor). I knew there was no use to do that, but I did as Chamberlin suggested, just to see what would happen. Frost sent it back and advised me to send it to Chamberlin; so there I was. I recognized that that paper was objectionable because it was too long. But the theme is so big it is next to impossible to present it adequately in short papers. Nevertheless, I tried once more in the two little papers (11 pages each, typewritten) mentioned at the beginning of this letter. They were nicely illustrated. I sent them to the American Journal of Science, but the trip proved to be only an excursion. *Now*, I am in the midst of one more effort to get somewhere with these ideas.

This time I hope to realize it in book form, have a publisher in N. Y. in sight. I have it about half written. I can loan you about half the manuscript for a few days. You may read it and return it as promptly as you can. I may include one of the earlier short papers which I intend to work into the latter part of the present paper. What I send you will cover my main theme fairly well. I enclose pamphlets now; will send you manuscript about Feb. 20.

Very truly yours,

(signed) Frank B. Taylor

December 13th, 1933.

Dear Lane:

Just to remind you that this is the birthday of an idea. On December 13th, 1884, forty-nine years ago today, I first conceived of the idea that the moon became the satellite of the earth by capture directly out of space. I doubt if you have ever been much attracted by my "speculations," but I think I may safely call your attention now to the fact that the world is beginning to come my way, very slowly and only a little, it is true, but while I may not live to see the finish, I think that you with your greater vitality may do so.

You are having your own A. A. A. S. party in Cambridge and I suppose you will stay there and not come to Chicago. I hope to go to the Chicago meeting but am not sure. Good health and a Merry Christmas to all of you.

Yours

(signed) Frank B. Taylor

HARRY WALTER TYLER (1863–1938)

Fellow in Class I, Section 1, 1902

Harry W. Tyler was born in Ipswich, Mass., April 16, 1863, and died in Washington, D. C., Feb. 3, 1938. He was a son of David M. and

Harriet (Wilcomb) Tyler. After graduating in 1884 with the degree of Bachelor of Science, from the Massachusetts Institute of Technology, he was an assistant and instructor in the mathematics department of the Institute for three years. From this period dates a little booklet *Entertainments in Chemistry; Easy Lessons and Directions for Safe Experiments.* In 1887 he was married to Alice Irving Brown of Roxbury, Mass. He spent 1887–88 in study at the University of Göttingen, and 1888–89 at the University of Erlangen, where he obtained the Doctor of Philosophy degree under Gordan, his dissertation being entitled *Beziehungen zwischen der Sylvester'schen und der Bézout'schen Determinante.*

In 1890 he returned to the Institute as an assistant professor of mathematics, became an associate professor in 1892, and was a professor from 1893 till he became professor emeritus in 1930; he was head of the department from 1901, and its high distinction to-day is due in no small degree to the wisdom of appointments which he arranged. Furthermore, it was during the last decade of his regime that 190 numbers of *Contributions* of his department, and ten volumes of the Institute's important quarterly *Journal of Mathematics and Physics*, were published. He served also as registrar, as secretary of the faculty, and for many years as president of the Faculty Club at M. I. T.

Professor Tyler was a constant attendant at meetings of societies and congresses in this country and in Europe and his services as secretary and committee chairman were ever in great demand. In 1893 he was secretary of the first international congress of mathematicians which was held in Chicago. He was chairman of the committee on incorporation of the American Mathematical Society. For many years he was prominent in the Association of University Professors and served as its remarkable general secretary from 1916 to 1934. He was vice-president of the Association for 1934 and 1935 and editor of its *Bulletin* until July 1937. He moved to Washington in 1930, and from that time until his death he was a consultant in science at the Library of Congress. His winning personality won him many friends and he was especially popular with the local alumni group of the Institute which repeatedly elected him as their president.

At congresses he was always an attendant at the sections dealing with pedagogical and historical questions. His *Short History of Science* (New York, 1917) prepared in collaboration with Professor W. T. Sedgwick was the outgrowth of a lecture course given by the authors for several years to undergraduate classes of the Institute. The new edition of 1939, in part a revision but to a great extent a new work, was prepared by Tyler and R. P. Bigelow.

Dr. Tyler had remarkable executive ability, "energy, patience, initiative and caution, firmness and tact, dignity and (not least valuable) a dry and penetrating sense of humor—the expression of which, when such expression would have been inopportune, he was almost always (with some difficulty one suspects) able to restrain."[1] He became a fellow of the Academy in 1902, the year when his fellow mathematicians rated him as 77th among the leading 80 mathematicians of the United States and Canada.

Of his four daughters the eldest, Margaret Tyler, is a physician, and associate clinical professor in obstetrics and gynecology at the Yale University School of Medicine.

R. C. ARCHIBALD

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[1] A. O. Lovejoy, "Harry Walter Tyler 1863–1938," Amer. Assoc. Univ. Prof., *Bulletin*, v. 24, 1938, p. 219–221. See also *Science*, n. s., v. 87, 1938, p. 181.

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41 Vladimir Kosma Zworykin.....Princeton, N. J.

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Section I—*Geology, Mineralogy, and Physics of the Globe*—47

15 Wallace Walter Atwood.....Worcester
41 Alan Mara Bateman.....New Haven, Conn.
38 Marland Pratt Billings.....Wellesley
21 Norman Levi Bowen.....Chicago, Ill.
16 Isaiah Bowman.....Baltimore, Md.
33 Charles Franklin Brooks.....Milton
29 Kirk Bryan.....Cambridge
33 Frank Morton Carpenter.....Lexington
93 Henry Helm Clayton.....Canton
09 Reginald Aldworth Daly.....Cambridge
34 Sterling Price Fergusson.....Milton
42 Russell Gibson.....Belmont
17 James Walter Goldthwait.....Hanover, N. H.
14 Louis Caryl Graton.....Cambridge
17 Herbert Ernest Gregory.....Honolulu, T. H.
21 William Jackson Humphreys...Washington, D. C.
16 Ellsworth Huntington.....New Haven, Conn.
44 Columbus O'Donnell Iselin.....Woods Hole
95 Robert Tracy Jackson.....Peterborough, N. H.
02 Thomas Augustus Jaggar.....Honolulu, T. H.
10 Alfred Church Lane.....Cambridge
25 Esper Signius Larsen, Jr.....Belmont
15 Andrew Cowper Lawson.....Berkeley, Cal.
43 Lewis Don Leet.....Harvard
16 Charles Kenneth Leith.....Madison, Wis.
31 George Francis McEwen.....La Jolla, Cal.
27 Donald Hamilton McLaughlin...New York, N. Y.
25 Kirtley Fletcher Mather.....Newton Center
35 Warren Judson Mead.....Belmont
21 John Campbell Merriam.....Washington, D. C.
17 William John Miller.....Los Angeles, Cal.
32 Frederick Kuhne Morris.....Cambridge
34 Walter Harry Newhouse.....Melrose
17 Percy Edward Raymond.....Lexington
22 Austin Flint Rogers.....Palo Alto, Cal.
34 Carl-Gustaf Arvid Rossby.....Chicago, Ill.
19 Waldemar Theodore Schaller...Washington, D. C.
12 William Berryman Scott.....Princeton, N. J.
11 Hervey Woodburn Shimer.....Hingham
41 Chester Stock.....Pasadena, Cal.
44 Harald Ulrik Sverdrup.....La Jolla, Cal.
17 Thomas Wayland Vaughan....Washington, D. C.
08 Charles Hyde Warren.....New Haven, Conn.
14 Herbert Percy Whitlock.....New York, N. Y.
35 Derwent Stainthorpe Whittlesey.....Cambridge
15 Bailey Willis.....Palo Alto, Cal.
15 Frederick Eugene Wright.....Washington, D. C.

Class II, Section II—*Botany*—39

30 LeRoy Abrams.....Palo Alto, Cal.
11 Oakes Ames.....North Easton
34 Edgar Anderson.....St. Louis, Mo.
15 Irving Widmer Bailey.....Cambridge
00 Liberty Hyde Bailey.....Ithaca, N. Y.
21 Edward Wilber Berry.....Baltimore, Md.
40 Albert Francis Blakeslee.....Northampton
98 Douglas Houghton Campbell.....Palo Alto, Cal.
16 Bradley Moore Davis.....Ann Arbor, Mich.
35 Bernard Ogilvie Dodge.....New York, N. Y.
41 Arthur Johnson Eames.....Ithaca, N. Y.
21 Rollins Adams Emerson.....Ithaca, N. Y.
12 Alexander William Evans.....New Haven, Conn.
29 Joseph Horace Faull.....Cambridge
00 Merritt Lyndon Fernald.....Cambridge
44 Paul Rupert Gast.....Petersham
11 Robert Almer Harper.....Bedford, Va.
98 John George Jack.....East Walpole
28 Willis Linn Jepson.....Berkeley, Cal.
27 Ivan Murray Johnston.....Brookline
34 Donald Forsha Jones.....New Haven, Conn.
14 Burton Edward Livingston.....Riderwood, Md.
40 Paul Christoph Mangelsdorf.....Newtonville
42 William Ralph Maxon.....Washington, D. C.
21 Elmer Drew Merrill.....Jamaica Plain
10 Winthrop John Vanleuven Osterhout
New York, N. Y.
27 George James Peirce.....Palo Alto, Cal.
44 Hugh Miller Raup.....Jamaica Plain
14 Alfred Rehder.....Jamaica Plain
30 Karl Sax.....Forest Hills
34 Edmund Ware Sinnott.....New Haven, Conn.
44 Albert Charles Smith.....Jamaica Plain
34 Gilbert Morgan Smith.....Palo Alto, Cal.
23 Elvin Charles Stakman.....St. Paul, Minn.
38 Kenneth Vivian Thimann.....Cambridge
92 William Trelease.....Urbana, Ill.
31 Charles Alfred Weatherby.....Cambridge

22 William Henry Weston, Jr. ..... Winchester
32 Ralph Hartley Wetmore ..... Cambridge

CLASS II, SECTION III—*Zoology and Physiology*—66

22 Nathan Banks ..... Holliston
16 Thomas Barbour ..... Boston
33 Philip Bard ..... Baltimore, Md.
09 Francis Gano Benedict ..... Machiasport, Me.
11 Henry Bryant Bigelow ..... Concord
14 Robert Payne Bigelow ..... Brookline
35 Charles Henry Blake ..... Lincoln
20 William T. Bovie ..... Fairfield, Me.
24 Edward Allen Boyden ..... Minneapolis, Minn.
16 John Lewis Bremer ..... Boston
15 Charles Thomas Brues ..... Newtonville
28 John Wymond Miller Bunker ..... Belmont
06 Walter Bradford Cannon ..... Cambridge
22 Thorne Martin Carpenter ..... West Roxbury
00 William Ernest Castle ..... Berkeley, Cal.
29 Lemuel Roscoe Cleveland ..... Jamaica Plain
26 Edwin Joseph Cohn ..... Cambridge
14 Edwin Grant Conklin ..... Princeton, N. J.
23 Manton Copeland ..... Brunswick, Me.
27 William John Crozier ..... Belmont
17 Joseph Augustine Cushman ..... Sharon
29 Hallowell Davis ..... Cambridge
33 Alden Benjamin Dawson ..... Belmont
25 Samuel Randall Detwiler ..... New York, N. Y.
43 David Bruce Dill ..... Washington, D. C.
25 Herbert McLean Evans ..... Berkeley, Cal.
34 Cyrus Hartwell Fiske ..... Lexington
15 Alexander Forbes ..... Milton
34 John Farquhar Fulton ..... New Haven, Conn.
31 William King Gregory ..... New York, N. Y.
36 Frederick Lee Hisaw ..... Belmont
29 Leigh Hoadley ..... Cambridge
34 Hudson Hoagland ..... Worcester
24 Samuel Jackson Holmes ..... Berkeley, Cal.
28 Roy Graham Hoskins ..... Waban
13 Leland Ossian Howard ..... Washington, D. C.
14 Herbert Spencer Jennings ..... Los Angeles, Cal.
13 Charles Atwood Kofoid ..... Berkeley, Cal.
44 Eugene Markley Landis ..... Brookline
16 Frederic Thomas Lewis ..... Waban
33 Frank Rattray Lillie ..... Chicago, Ill.
14 Ralph Stayner Lillie ..... Chicago, Ill.
17 Richard Swann Lull ..... New Haven, Conn.
43 Brenton Reid Lutz ..... Melrose
84 Edward Laurens Mark ..... Cambridge
15 Albert Davis Mead ..... Providence, R. I.
27 Axel Leonard Melander ..... Riverside, Cal.
35 Karl Friedrich Meyer ..... San Francisco, Cal.
21 Gerrit Smith Miller ..... Washington, D. C.
28 Thomas Hunt Morgan ..... Pasadena, Cal.
42 Hermann Joseph Muller ..... Amherst
95 George Howard Parker ..... Cambridge
21 Henry Augustus Pilsbry ..... Philadelphia, Pa.
39 Gregory Pincus ..... Worcester
27 Frederick Haven Pratt ..... Wellesley Hills
09 Herbert Wilbur Rand ..... Cambridge
32 David Rapport ..... Cambridge
23 Alfred Clarence Redfield ..... Cambridge
34 Alfred Newton Richards ..... Bryn Mawr, Pa.
34 Oscar Riddle ..... Cold Spring Harbor, N. Y.
37 Alfred Sherwood Romer ..... Cambridge
25 Alexander Grant Ruthven ..... Ann Arbor, Mich.
41 Francis Otto Schmitt ..... Belmont
15 Arthur Wisswald Weysse ..... Woburn
38 George Bernays Wislocki ..... Milton
33 Jeffries Wyman, Jr. ..... Chestnut Hill

CLASS II, SECTION IV—*Medicine and Surgery*—60

41 Fuller Albright ..... Brookline
32 Joseph Charles Aub ..... Belmont
36 Oswald Theodore Avery ..... New York, N. Y.
29 James Bourne Ayer ..... Milton
(28) 32 Franklin Greene Balch ..... Boston
41 Walter Bauer ..... Waban
31 George Blumer ..... San Marino, Cal.
43 Arlie Vernon Bock ..... Cambridge
36 Charles Sidney Burwell ..... Brookline
19 Alexis Carrel ..... New York, N. Y.
31 William Bosworth Castle ..... Brookline
30 David Cheever ..... Boston
13 Henry Asbury Christian ..... Brookline
42 William Irving Clark ..... Worcester
21 Rufus Cole ..... Mount Kisco, N. Y.
32 Elliott Carr Cutler ..... Brookline
31 Eugene Floyd DuBois ..... New York, N. Y.
44 Maxwell Finland ..... Squantum
33 Reginald Fitz ..... Brookline
11 Simon Flexner ..... New York, N. Y.
27 James Lawder Gamble ..... Brookline
22 Joseph Lincoln Goodale ..... Ipswich
21 Ross Granville Harrison ..... New Haven, Conn.
27 Percy Rogers Howe ..... Belmont
21 William Henry Howell ..... Baltimore, Md.
33 Edgar Erskine Hume ..... Frankfort, Ky.
15 Reid Hunt ..... Boston
34 Henry Jackson, Jr. ..... Chestnut Hill
12 Elliott Proctor Joslin ..... Boston
43 Chester Scott Keefer ..... Brookline
23 Roger Irving Lee ..... Brookline
42 Samuel Albert Levine ..... Newton Center
29 Edwin Allen Locke ..... Williamstown
28 Warfield Theobald Longcope ..... Baltimore, Md.
32 Fred Bates Lund ..... Newton Center
40 William de Berniere MacNider ..... Chapel Hill, N. C.
44 William Malamud ..... Worcester
34 Leroy Matthew Simpson Miner ..... Newtonville
26 George Richards Minot ..... Brookline
41 Alan Richards Moritz ..... Jamaica Plain
28 William Lorenzo Moss ..... Athens, Ga.
28 John Howard Mueller ..... West Roxbury
25 Robert Bayley Osgood ..... Boston
37 Walter Walker Palmer ..... New York, N. Y.
27 Joseph Hershey Pratt ..... Brookline
35 Tracy Jackson Putnam ..... New York, N. Y
34 William Carter Quinby ..... Brookline
34 Arthur Hiler Ruggles ..... Providence, R. I.

39 Frederick Fuller Russell.....Brookline
39 William Thomas Salter.....New Haven, Conn.
33 George Cheever Shattuck.....Brookline
30 Torald Hermann Sollmann.....Cleveland, O.
14 Richard Pearson Strong.....Boston
30 Fritz Bradley Talbot.....Brookline
44 George Widmer Thorn.....Cambridge
14 Ernest Edward Tyzzer.....Wakefield
14 Frederick Herman Verhoeff.....Brookline
27 Joseph Treloar Wearn.....Cleveland, Ohio
40 Paul Dudley White.....Brookline
12 Simeon Burt Wolbach.....South Sudbury

CLASS III—The Social Arts—174

Section I—*Jurisprudence*—39

(24) 32 Francis Noyes Balch.....Jamaica Plain
38 Henry Moore Bates.....Ann Arbor, Mich.
36 Stoughton Bell.....Cambridge
33 Harry Augustus Bigelow.....Chicago, Ill.
36 Wilfred Bolster.....Wellesley
36 Claude Raymond Branch.....Providence, R. I.
33 John Dickinson.....Philadelphia, Pa.
38 Robert Gray Dodge.....Boston
31 Fred Tarbell Field.....Newton
39 Herbert Funk Goodrich.....Philadelphia, Pa.
33 Theodore Francis Green.....Providence, R. I.
38 Frank Washburn Grinnell.....Boston
41 Erwin Nathaniel Griswold.....Belmont
39 John Loomer Hall.....Boston
39 Augustus Noble Hand.....New York, N. Y.
33 Learned Hand.....New York, N. Y.
39 Albert James Harno.....Urbana, Ill.
18 Charles Evans Hughes.....Washington, D. C.
38 Melvin Maynard Johnson.....Brookline
38 James McCauley Landis.....Cambridge
32 Sayre Macneil.....Pasadena, Cal.
32 Calvert Magruder.....Cambridge
31 William DeWitt Mitchell.....New York, N. Y.
31 Edmund Morris Morgan.....Arlington
36 Henry Parkman, Jr.....Boston
39 Robert Porter Patterson.....Washington, D. C.
01 George Wharton Pepper.....Philadelphia, Pa.
11 Roscoe Pound.....Watertown
38 William Morton Prest.....Boston
36 Stanley Elroy Qua.....Lowell
32 Francis Bowes Sayre.....Washington, D. C.
21 Austin Wakeman Scott.....Cambridge
36 Sidney Post Simpson.....Cambridge
33 Harlan Fiske Stone.....Washington, D. C.
39 Thomas Walter Swan.....New York, N. Y.
32 Edward Sampson Thurston.....Berkeley, Cal.
38 Bentley Wirt Warren.....Boston
(28) 32 Edmund Allen Whitman.....Cambridge
43 Charles Edward Wyzanski, Jr.....Cambridge

Class III, Section II—*Government, International Law, and Diplomacy*—28

36 Howard Landis Bevis.....Columbus, O.
33 Edwin Montefiore Borchard.....New Haven, Conn.
40 Robert Granville Caldwell.....Belmont
32 William Richards Castle, Jr.....Washington, D. C.
32 Joseph Perkins Chamberlain.....New York, N. Y.
33 Robert Treat Crane.....New York, N. Y.
35 Tyler Dennett.....Hague, N. Y.
31 Sidney Bradshaw Fay.....Cambridge
27 William Cameron Forbes.....Norwood
34 Edgar Stephenson Furniss.....New Haven, Conn.
32 Joseph Clark Grew.....Washington, D. C.
35 Charles Grove Haines.....Los Angeles, Cal.
41 Hajo Holborn.....Hamden, Conn.
27 Arthur Norman Holcombe.....Cambridge
31 Manley Ottmer Hudson.....Cambridge
32 Philip Carryl Jessup.....New York, N. Y.
32 Charles Edward Merriam.....Chicago, Ill.
19 John Bassett Moore.....New York, N. Y.
13 William Bennett Munro.....Pasadena, Cal.
41 Gaetano Salvemini.....Cambridge
40 Thomas Head Thomas.....Cambridge
44 Sarah Wambaugh.....Cambridge
43 Payson Sibley Wild, Jr.....Cambridge
27 Westel Woodbury Willoughby.....Washington, D. C.
32 William Franklin Willoughby.....Washington, D. C.
14 George Grafton Wilson.....Grafton, Vt.
27 Quincy Wright.....Chicago, Ill.
33 Henry Aaron Yeomans.....Harvard

Class III, Section III—*Economics and Sociology*—67

36 James Waterhouse Angell.....New York, N. Y.
36 James Cummings Bonbright.....New York, N. Y.
43 Augusta Fox Bronner (Mrs. William Healy) Boston
44 Douglass Vincent Brown.....Brookline
33 Harold Hitchings Burbank.....Cambridge
34 John Maurice Clark.....Westport, Conn.
28 Arthur Harrison Cole.....Cambridge
31 Melvin Thomas Copeland.....Cambridge
31 William Leonard Crum.....Cambridge
32 William James Cunningham.....Cambridge
21 Clive Day.....New Haven, Conn.
32 Arthur Stone Dewing.....Newton
41 Carl Rupp Doering.....Cambridge
32 Wallace Brett Donham.....Cambridge
34 John Franklin Ebersole.....Belmont
42 Howard Sylvester Ellis.....Berkeley, Cal.
36 Fred Rogers Fairchild.....Hamden, Conn.
36 Frank Albert Fetter.....Princeton, N. J.
12 Irving Fisher.....New Haven, Conn.
34 Ralph Evans Freeman.....Cambridge
13 Edwin Francis Gay.....San Marino, Cal.
33 Sheldon Glueck.....Cambridge
39 Gottfried Haberler.....Cambridge
34 Robert Murray Haig.....New York, N. Y.
41 Earl Jefferson Hamilton.....Evanston, Ill.
32 Henry Wyman Holmes.....Cambridge
34 Edwin Walter Kemmerer.....Princeton, N. J.
34 Frank Hyneman Knight.....Chicago, Ill.
42 Wassily W. Leontief.....Cambridge
36 Roswell Cheney McCrea.....Augusta, Ga.
34 Robert Morison MacIver.....New York, N. Y.

32 Walter Wallace McLaren.....Williamstown
36 Malcolm Perrine McNair.....Cambridge
32 Leon Carroll Marshall.....Chevy Chase, Md.
33 Edward Sagendorph Mason.....Cambridge
36 Elton Mayo.....Cambridge
34 Richard Stockton Meriam.....South Lincoln
34 Harry Alvin Millis.....Washington, D. C.
32 Frederick Cecil Mills.....New York, N. Y.
31 Wesley Clair Mitchell.....New York, N. Y.
34 Arthur Eli Monroe.....Cambridge
32 Harold Glenn Moulton.....Washington, D. C.
34 Edwin Griswold Nourse.....Washington, D. C.
32 William Fielding Ogburn.....Chicago, Ill.
42 William Andrew Paton.....Ann Arbor, Mich.
32 Leo S. Rowe.....Washington, D. C.
37 Clyde Orval Ruggles.....Cambridge
42 Paul Anthony Samuelson.....Cambridge
36 Thomas Henry Sanders.....Cambridge
33 Josef Alois Schumpeter.....Cambridge
43 Benjamin Morris Selekman.....Cambridge
32 Carl Snyder.....New York, N. Y.
31 Pitirim Alexandrovich Sorokin.....Winchester
41 Francis Trow Spaulding.....Cambridge
31 Oliver Mitchell Wentworth Sprague.....Cambridge
34 Frederick John Teggart.....Berkeley, Cal.
33 William Isaac Thomas.....Berkeley, Cal.
37 Harry Rudolph Tosdal.....Belmont
31 Donald Skeele Tucker.....Belmont
41 Robert Ulich.....Cambridge
33 Abbott Payson Usher.....Salem
34 Jacob Viner.....Chicago, Ill.
38 T[homas] North Whitehead.....Cambridge
32 John Henry Williams.....Cambridge
36 Joseph Henry Willits.....New York, N. Y.
34 Leo Wolman.....New York, N. Y.
34 Carle Clark Zimmerman.....Winchester

CLASS III, SECTION IV—*Administration and Affairs*—40

(25) 32 Charles Francis Adams.....Concord
39 Chester Irving Barnard.....Newark, N. J.
(25) 32 Charles Foster Batchelder
Peterborough, N. H.
44 Adolf Augustus Berle, Jr.....Washington, D. C.
44 Raymond Blaine Fosdick.....New York, N. Y.
41 Godfrey Lowell Cabot.....Boston
43 Ada Louise Comstock (Mrs. Wallace Notestein)
New Haven, Conn.
42 Donald Kirk David.....Boston
38 Edmund Ezra Day.....Ithaca, N. Y.
41 Frederic Adrian Delano.....Washington, D. C.
32 Henry Sturgis Dennison.....Framingham
(28) 32 William Lusk Webster Field.....Milton
39 Ralph Edward Flanders.....Springfield, Vt.
38 Horace Sayford Ford.....Belmont
35 Jerome Davis Greene.....Cambridge
42 Roger Sherman Greene.....Worcester
44 Ernest Martin Hopkins.....Hanover, N. H.
(28) 32 Edward Jackson Holmes.....Topsfield
41 Edward Godfrey Huber.....Waban
34 Henry Plimpton Kendall.....Sharon
44 James Rhyne Killian, Jr.....Wellesley Hills
32 Thomas William Lamont.....New York, N. Y.
39 Morris Evans Leeds.....Philadelphia, Pa.
34 Clarence Cook Little.....Bar Harbor, Me.
36 Dumas Malone.....Charlottesville, Va.
42 Daniel L. Marsh.....Boston
33 James Vance May.....Watertown
02 Herbert Putnam.....Washington, D. C.
34 Erwin Haskell Schell.....Cambridge
38 Charles Seymour.....New Haven, Conn.
35 Henry Lee Shattuck.....Boston
37 Henry Southworth Shaw.....Melrose
(28) 32 Payson Smith.....Orono, Me.
33 Albert Warren Stearns.....Billerica
36 Clair Elsmere Turner.....Arlington
(24) 32 Edwin Sibley Webster.....Brookline
44 Charles Edward Wilson.....New York
41 Laurence Leathe Winship.....South Sudbury
(25) 32 Benjamin Loring Young.....Weston
39 Owen D. Young.....New York, N. Y.

CLASS IV—THE HUMANITIES—187

SECTION I—*Theology, Philosophy, and Psychology*—40

32 Michael Joseph Ahern.....Weston
32 James Rowland Angell.....Hamden, Conn.
33 John Gilbert Beebe-Center.....Swampscott
38 Julius Seelye Bixler.....Waterville, Me.
24 Edwin Garrigues Boring.....Cambridge
28 Edgar Sheffield Brightman.....Newton
31 Henry Addington Bruce.....Cambridge
32 Leonard Carmichael.....Tufts College
36 Robert Pierce Casey.....Providence, R. I.
28 Walter Fenno Dearborn.....Cambridge
18 Edmund Burke Delabarre.....Providence, R. I.
33 Curt John Ducasse.....Providence, R. I.
43 Angus Dun.....Washington, D. C.
38 James Everett Frame.....Princeton, N. J.
37 Clarence Henry Graham.....Providence, R. I.
30 William Henry Paine Hatch.....Cambridge
32 William Healy.....Natick
35 Clark Leonard Hull.....New Haven, Conn.
33 Walter Samuel Hunter.....Providence, R. I.
28 Albert Cornelius Knudson.....Cambridge
32 Karl Spencer Lashley.....Orange Park, Fla.
29 Clarence Irving Lewis.....Lexington
42 Richard Peter McKeon.....Chicago, Ill.
35 Henry Alexander Murray, Jr.....Boston
32 Arthur Darby Nock.....Cambridge
28 Johnson O'Connor.....Boston
17 Charles Edwards Park.....Boston
33 Carroll Cornelius Pratt.....New Brunswick, N. J.
30 James Hugh Ryan.....Omaha, Neb.
31 Henry Knox Sherrill.....Boston
27 Willard Learoyd Sperry.....Cambridge
29 Russell Henry Stafford.....Brookline
34 Lewis Madison Terman.....Belmont
34 Edward Lee Thorndike.....Montrose, N. Y.
37 Louis Leon Thurstone.....Chicago, Ill.

28 Henry Bradford Washburn.....Cambridge
17 John Broadus Watson.....New York, N. Y.
33 Frederic Lyman Wells.....Newton Highlands
35 Robert Sessions Woodworth.....New York, N. Y.
15 Robert Mearns Yerkes.....New Haven, Conn.

CLASS IV, SECTION II—*History, Archaeology, and Anthropology*—43

41 Warren Ortman Ault.....Waban
28 James Phinney Baxter, 3d.....Williamstown
23 Carl Lotus Becker.....Ithaca, N. Y.
27 Robert Pierpont Blake.....Cambridge
39 Crane Brinton.....Cambridge
42 Henry Joel Cadbury.....Cambridge
(25) 32 William Brooks Cabot.....Boston
34 Clarence Gordon Campbell.....New York, N. Y.
12 George Henry Chase.....Cambridge
44 William Bell Dinsmoor.....New York, N. Y.
21 Max Farrand.....Bar Harbor, Me.
21 William Scott Ferguson.....Cambridge
38 Allyn Bailey Forbes.....Cambridge
33 Henry Thatcher Fowler.....Harmony, R. I.
38 Claude Moore Fuess.....Andover
18 Evarts Boutell Greene...Croton-on-Hudson, N. Y.
43 Hugh O'Neill Hencken.....Chestnut Hill
14 Bert Hodge Hill.....Athens, Greece
27 Earnest Albert Hooton.....Cambridge
33 Halford Lancaster Hoskins.....Medford
44 Clyde Kay Maben Kluckhohn.....Cambridge
12 Alfred Louis Kroeber.....Berkeley, Cal.
15 Kirsopp Lake.....So. Pasadena, Cal.
44 Ambrose Lansing.....New York, N. Y.
22 George La Piana.....Cambridge
32 Waldo Gifford Leland.....Washington, D. C.
41 William E. Lingelbach.....Philadelphia, Pa.
20 Charles Howard McIlwain.....Belmont
14 Roger Bigelow Merriman.....Cambridge
38 Stewart Mitchell.....Gloucester
15 Samuel Eliot Morison.....Canton
34 Robert Henry Pfeiffer.....Cambridge
34 David Moore Robinson.....Baltimore, Md.
23 Michael Ivanovich Rostovtzeff.New Haven, Conn.
27 George Sarton.....Cambridge
38 Bernadotte Everly Schmitt.....Chicago, Ill.
36 Donald Scott.....Cambridge
34 Theodore Leslie Shear.....Princeton, N. J.
26 Herbert Joseph Spinden.....Brooklyn, N. Y.
32 Charles Holt Taylor.....Cambridge
11 Alfred Marston Tozzer.....Cambridge
39 Henry Rouse Viets.....Dedham
20 Clark Wissler.....New York, N. Y.

CLASS IV, SECTION III—*Philology*—55

33 William Nickerson Bates.....Philadelphia, Pa.
35 Charles Henry Beeson.....Chicago, Ill.
33 Campbell Bonner.....Ann Arbor, Mich.
35 Robert Johnson Bonner.....Chicago, Ill.
41 Giusepps Antonio Borgese.....Chicago, Ill.
21 Carl Darling Buck.....Chicago, Ill.
18 Edward Capps.....Princeton, N. J.
20 Walter Eugene Clark.....Cambridge
32 Ronald Salmon Crane.....Chicago, Ill.
32 Morris William Croll.....Princeton, N. J.
44 Henry Grattan Doyle.....Washington, D. C.
20 Franklin Edgerton.....New Haven, Conn.
40 Serge Elisséeff.....Cambridge
14 Jeremiah Denis Mathias Ford.....Cambridge
30 James Geddes, Jr.....Brookline
16 Louis Herbert Gray.....New York, N. Y
25 William Chase Greene.....Cambridge
13 Charles Burton Gulick.....Cambridge
34 Austin Morris Harmon.....New Haven, Conn.
31 Raymond Dexter Havens.....Baltimore, Md.
38 Richmond Laurin Hawkins.....Cambridge
18 George Lincoln Hendrickson...New Haven, Conn.
17 William Guild Howard.....Cambridge
40 Werner Wilhelm Jaeger.....Watertown
32 (Ralph) Hayward Keniston....Ann Harbor, Mich.
34 Roland Grubb Kent.....Wynnewood, Pa.
33 Hans Kurath.....Providence, R. I.
39 Henry Carrington Lancaster.....Baltimore, Md.
32 Ernest Felix Langley.....Cambridge
33 Ivan Mortimer Linforth.....Berkeley, Cal.
44 Elias Avery Lowe.....Princeton, N. J.
11 Albert Matthews.....Boston
35 Benjamin Dean Meritt.....Princeton, N. J.
43 Perry Gilbert Eddy Miller.....Cambridge
28 William Albert Nitze.....Los Angeles, Cal.
32 George Rapall Noyes.....Berkeley, Cal.
34 William Abbott Oldfather.....Urbana, Ill.
33 Howard Rollin Patch.....Northampton
32 Arthur Stanley Pease.....Cambridge
11 Fred Norris Robinson.....Cambridge
38 Hyder Edward Rollins.....Cambridge
31 Robert Kilburn Root.....Princeton, N. J.
35 Henry Arthur Sanders.....Ann Arbor, Mich.
18 Rudolph Schevill.....Berkeley, Cal.
43 Jean Joseph Seznec.....Cambridge
32 Horatio Elwin Smith.....New York, N. Y.
39 John Strong Perry Tatlock.....Berkeley, Cal.
32 William Thomson.....So. Lincoln
11 Charles Cutler Torrey.....New Haven, Conn.
44 La Rue Van Hook.....New York, N. Y.
33 George Benson Weston.....Cambridge
30 Ernest Hatch Wilkins.....Oberlin, Ohio
33 Harry Austryn Wolfson.....Cambridge
39 William Hoyt Worrell.....Ann Arbor, Mich.

CLASS IV, SECTION IV—*The Fine Arts and Belles Lettres*—50

43 Leonard Bacon.....Peace Dale, R. I.
26 Frank Weston Benson.....Salem
32 (William) Welles Bosworth...Locust Valley, N. Y.
42 John Nash Douglas Bush.....Cambridge
33 John Alden Carpenter.....Chicago, Ill.
43 Willa Sibert Cather.....New York, N. Y.
32 Chalmers Dancy Clifton.....New York, N. Y.
32 Kenneth John Conant.....Cambridge
34 Charles Jay Connick.....Newtonville
29 Charles Townsend Copeland.....Cambridge

34 Samuel Foster Damon.....Providence, R. I.
41 Archibald Thompson Davison.....Lincoln
32 George Harold Edgell.....Cambridge
21 William Emerson.....Cambridge
30 John Erskine.....New York, N. Y.
18 Edward Waldo Forbes.....Cambridge
31 Robert Frost.....South Shaftsbury, Vt.
27 Wallace Goodrich.....Manchester
44 Walter Gropius.....Lincoln
36 William Clifford Heilman.....Cambridge
29 Edward Burlingame Hill.....Cambridge
31 Robert Silliman Hillyer.....Cambridge
27 Charles Hopkinson.....Manchester
12 Mark Antony DeWolfe Howe.....Boston
38 Joseph Hudnut.....Boston
18 Archer Milton Huntington.....New York, N. Y.
31 Henry James.....New York, N. Y.
38 Howard Mumford Jones.....Cambridge
42 Otto Kinkeldey.....Ithaca, N. Y.
33 Leo Rich Lewis.....Tufts College
21 John Livingston Lowes.....Cambridge
21 Charles Donagh Maginnis.....Brookline
31 Paul Manship.....New York, N. Y.
31 Daniel Gregory Mason.....New York, N. Y.
31 Frank Jewett Mather...Washington Crossing, Pa.
44 Charles Rufus Morey.....Princeton, N. J.
31 Kenneth Ballard Murdock.....Boston
14 William Allan Neilson.....Falls Village, Conn.
28 Curtis Hidden Page.....Gilmanton, N. H
(24) 32 Anthony John Philpott.....Arlington
41 Walter Hamor Piston, Jr.....Belmont
21 Chandler Rathfon Post.....Cambridge
22 Paul Joseph Sachs.....Cambridge
14 Ellery Sedgwick.....Boston
19 Henry Dwight Sedgwick.....Dedham
33 David Stanley Smith.....Woodbridge, Conn.
39 Francis Henry Taylor.....New York, N. Y.
43 Randall Thompson.....Charlottesville, Va.
44 Karl Viëtor.....Cambridge
39 Karl Ephraim Weston.....Williamstown
44 Herbert Eustis Winlock.....New York, N. Y.
22 Charles Henry Conrad Wright.....Cambridge

FELLOWS EMERITI—5

Class IV, Section I—1

21 William Ernest Hocking.....Madison, N. H.

Class IV, Section III—2

15 Carl Newell Jackson.....Snowville, N. H.
13 Edward Kennard Rand.....Cambridge

Class IV, Section IV—2

29 Edward Burlingame Hill.....Cambridge
21 John Livingston Lowes.....Cambridge

FOREIGN HONORARY MEMBERS—119

(Number limited to one hundred and thirty)

CLASS I—Mathematical and Physical Sciences—27

Section I—*Mathematics and Astronomy*—8

39 Arnaud Denjoy ..... Paris
22 Sir Arthur Stanley Eddington, Cambridge, England
34 Ronald Aylmer Fisher ..... Harpenden, Herts
20 Jacques Salomon Hadamard ..... Princeton, N. J.
21 Godfrey Harold Hardy ..... Cambridge, England
27 Ejnar Hertzsprung ..... Leyden
15 Charles Jean de la Vallee Poussin ..... Louvain
29 Hermann Weyl ..... Princeton, N. J.

Class I, Section II—*Physics*—6

29 Vilhelm Frimann Koren Bjerknes ..... Oslo
24 Albert Einstein ..... Princeton, N. J.
29 James Franck ..... Chicago, Ill.
29 Abram F. Joffé ..... Leningrad
28 Freidrich Paschen ..... Charlottenburg
14 Max Planck ..... Berlin

Class I, Section III—*Chemistry*—7

29 Johannes N. Brönsted ..... Copenhagen
27 Peter Debye ..... Ithaca, N. Y.
33 Jaroslav Heyrovsky ..... Prague
33 Fritz Paneth ..... Durham
38 Leopold Ruzicka ..... Zürich
38 Nevil Vincent Sidgwick ..... Oxford
29 Heinrich Wieland ..... Munich

Class I, Section IV—*Technology and Engineering*—6

36 Edward Victor Appleton ..... London
34 Luigi Lombardi ..... Rome
29 Ludwig Prandtl ..... Göttingen
29 Emil Probst ..... Oxford
29 Aurel Stodola ..... Zürich
31 Karl Willy Wagner ..... Berlin

CLASS II—Natural and Physiological Sciences—29

Section I—*Geology, Mineralogy, and Physics of the Globe*—7

36 Raoul Blanchard ..... Grenoble, France
29 Léon William Collet ..... Geneva
34 Arthur Holmes ..... Durham
22 Emmanuel de Margerie ..... Paris
21 Gustaf Adolf Frederik Molengraaff ..... Delft
44 Ezequiel Ordoñez ..... Mexico, D. F.
18 Sir William Napier Shaw ..... London

Class II, Section II—*Botany*—6

32 Frederick Orpen Bower ..... Ripon
31 Ludwig Diels ..... Berlin
32 Kingo Miyabe ..... Sapporo, Japan
42 Lorenzo Raimundo Parodi ..... Buenos Aires
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35 Sir William Wright Smith ..... Edinburgh

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Lewis, C. I. F, IV: 1
Lewis, F. T. F, II: 3
Lewis, G. N. F, I: 3
Lewis, L. R. F, IV: 4
Lewis, W. K. F, I: 3
Lillie, F. R. F, II: 3
Lillie, R. S. F, II: 3
Lindsay, R. B. F, I: 2
Linforth, I. M. F, IV: 3
Lingelbach, W. E. F, IV: 2
Little, C. C. F, III: 4
Livingston, B. E. F, II: 2
Locke, E. A. F, II: 4
Lombardi, L. FHM, I: 4

Longcope, W. T. F, II: 4
Lowe, E. A. F, IV: 3
Lowes, J. L. FE, IV: 4
Lull, R. S. F, II: 3
Lund, F. B. F, II: 4
Lutz, B. R. F, II: 3
Luyten, W. J. F, I: 1
Lyman, T. F, I: 2
McCrea, R. C. F, III: 3
McEwen, G. F. F, II: 1
McIlwain, C. H. F, IV: 2
MacInnes, D. A. F, I: 3
MacIver, R. M. F, III: 3
McKeehan, L. W. F, I: 2
McKeon, R. P. F, IV: 1
MacLane, S. F, I: 1
McLaren, W. W. F, III: 3
McLaughlin, D. H. F, II: 1
Macmillan, Lord. FHM, III: 1
McNair, M. P. F, III: 3
Macneil, S. F, III: 1
MacNider, W. de B. F, II: 4
Maginnis, C. D. F, IV: 4
Magruder, C. F, III: 1
Makarewicz, J. FHM, III: 1
Malone, D. F, III: 4
Malamud, W. F, II: 4
Mangelsdorf, P. C. F, II: 2
Manship, P. F, IV: 4
Margerie, E. de. FHM, II: 1
Mark, E. L. F, II: 3
Mark, K. L. F, I: 3
Marks, L. S. F, I: 4
Marsh, D. L. F, III: 4
Marshall, L. C. F, III: 3
Mason, D. G. F, IV: 4
Mason, E. S. F, III: 3
Mather, F. J. F, IV: 4
Mather, K. F. F, II: 1
Matthews, A. F, IV: 3
Maunier, R. FHM, III: 3
Maxon, W. R. F, II: 2
May, J. V. F, III: 4
Mayo, E. F, III: 3
Mazon, P. FHM, IV: 3
Mead, A. D. F, II: 3
Mead, W. J. F, II: 1
Mees, C. E. K. F, I: 3
Meinecke, F. FHM, IV: 2
Melander, A. L. F, II: 3
Menzel, D. H. F, I: 1
Meriam, R. S. F, III: 3
Meritt, B. D. F, IV: 3
Merriam, C. E. F, III: 2
Merriam, J. C. F, II: 1
Merrill, E. D. F, II: 2
Merriman, R. B. F, IV: 2
Merritt, E. G. F, I: 2
Meyer, K. F. F, II: 3
Milas, N. A. F, I: 3
Miller, G. A. F, I: 1
Miller, G. S. F, II: 3
Miller, J. A. F, I: 1
Miller, P. G. E. F, IV: 3
Miller, W. J. F, II: 1
Millikan, R. A. F, I: 2
Millis, H. A. F, III: 3
Mills, F. C. F, III: 3
Mimno, H. R. F, I: 2
Miner, L. M. S. F, II: 4
Minot, G. R. F, II: 4
Mises, R. von. F, I: 4
Mitchell, S. F, IV: 2
Mitchell, S. A. F, I: 1
Mitchell, W. C. F, III: 3
Mitchell, W. DeW. F, III: 1
Miyabe, K. FHM, II: 2
Miyajima, M. FHM, II: 4
Molengraaff, G. A. F. FHM, II: 1
Monroe, A. E. F, III: 3
Moore, J. B. F, III: 2
Moreland, E. L. F, I: 4
Morey, C. R. F, IV: 4
Morgan, E. M. F, III: 1
Morgan, T. H. F, II: 3
Morison, S. E. F, IV: 2
Moritz, A. R. F, II: 4
Morris, F. K. F, II: 1
Morse, M. F, I: 1
Morse, P. M. F, I: 2
Morton, A. A. F, I: 3
Moss, W. L. F, II: 4
Moulton, F. R. F, I: 1
Moulton, H. G. F, III: 3
Mueller, E. F, I: 3
Mueller, J. H. F, II: 4
Muller, H. J. F, II: 3
Munro, W. B. F, III: 2
Murdock, K. B. F, IV: 4
Murray, G. FHM, IV: 4
Murray, H. A., Jr. F, IV: 1
Neilson, W. A. F, IV: 4
Neumann, J. von. F, I: 1
Newhouse, W. H. F, II: 1
Nilsson, M. P. FHM, IV: 2
Nitze, W. A. F, IV: 3
Nock, A. D. F, IV: 1
Nourse, E. G. F, III: 3
Noyes, G. R. F, IV: 3
Noyes, W. A., Jr. F, I: 3
O'Connor, J. F, IV: 1
Oertel, H. FHM, IV: 3
Ogburn, W. F. F, III: 3
Oldenberg, O. F, I: 2
Oldfather, W. A. F, IV: 3
Olmsted, F. L. F, I: 4
Oppenheimer, J. R. F, I: 2
Ordoñez, E. FHM, II: 1
Osgood, R. B. F, II: 4
Osterhout, W. J. V. F, II: 2
Page, C. H. F, IV: 4
Page, L. F, I: 2
Palmer, W. W. F, II: 4
Paneth, F. FHM, I: 3
Park, C. E. F, IV: 1
Parker, G. H. F, II: 3
Parkman, H., Jr. F, III: 1
Parodi, L. R. FHM, II: 2
Paschen, F. FHM, I: 2
Patch, H. R. F, IV: 3
Paton, W. A. F, III: 3
Patterson, R. P. F, III: 1
Pauling, L. C. F, I: 3
Payne-Gaposchkin, C. F, I: 1
Pearse, L. F, I: 4
Pease, A. S. F, IV: 3
Peers, E. A. FHM, IV: 4
Peirce, G. J. F, II: 2
Pender, H. F, I: 4
Pepper, G. W. F, III: 1
Pfeiffer, R. H. F, IV: 2
Phillips, H. B. F, I: 1
Philpott, A. J. F, IV: 4
Pickard, G. W. F, I: 4
Pidal, R. M. FHM, IV: 3
Pierce, G. W. F, I: 2
Piéron, H. FHM, IV: 1
Pigou, A. C. FHM, III: 3
Pilsbry, H. A. F, II: 3
Pincus, G. F, II: 3
Piston, W. H. F, IV: 4
Planck, M. FHM, I: 2
Poor, C. L. F, I: 1
Post, C. R. F, IV: 4
Pound, R. F, III: 1
Prandtl, L. FHM, I: 4
Pratt, C. C. F, IV: 1
Pratt, F. H. F, II: 3
Pratt, J. H. F, II: 4
Prescott, S. C. F, I: 3
Prest, W. M. F, III: 1
Probst, E. FHM, I: 4
Purves, C. B. F, I: 3
Putnam, H. F, III: 4
Putnam, T. J. F, II: 4
Qua, S. E. F, III: 1
Quinby, W. C. F, II: 4
Rabaud, H. FHM, IV: 4
Rabi, I. I. F, I: 2
Rand, E. K. FE, IV: 3
Rand, H. W. F, II: 3
Rapport, D. F, II: 3
Raup, H. M. F, II: 2
Raymond, P. E. F, II: 1
Redfield, A. C. F, II: 3
Rehder, A. F, II: 2
Renner, O. FHM, II: 2
Richards, A. N. F, II: 3
Richards, R. H. F, I: 3
Richardson, R. G. D. F, I: 1

Riddle, O. F, II: 3
Rist, C. FHM, III: 3
Robinson, D. M. F, IV: 2
Robinson, F. N. F, IV: 3
Rogers, A. F. F, II: 1
Rollins, H. E. F, IV: 3
Romer, A. S. F, II: 3
Root, R. K. F, IV: 3
Rosanoff, M. A. F, I: 3
Rossby, C. G. A. F, II: 1
Rostovtzeff, M. I. F, IV: 2
Rowe, L. S. F, III: 3
Rowntree, B. S. FHM, III: 4
Rüdenberg, R. F, I: 4
Ruggles, A. H. F, II: 4
Ruggles, C. O. F, III: 3
Russell, F. F. F, II: 4
Russell, G. E. F, I: 4
Russell, H. N. F, I: 1
Ruthven, A. G. F, II: 3
Ruzicka, L. FHM, I: 3
Ryan, J. H. F, IV: 1
Sachs, P. J. F, IV: 4
Salter, W. T. F, II: 4
Salvemini, G. F, III: 2
Samuelson, P. A. F, III: 3
Sanders, H. A. F, IV: 3
Sanders, T. H. F, III: 3
Sarton, G. F, IV: 2
Sax, K. F, II: 2
Sayre, F. B. F, III: 1
Scatchard, G. F, I: 3
Schaller, W. T. F, II: 1
Schell, E. H. F, III: 4
Schevill, R. F, IV: 3
Schmitt, B. E. F, IV: 2
Schmitt, F. O. F, II: 3
Schumb, W. C. F, I: 3
Schumpeter, J. A. F, III: 3
Scott, A. W. F, III: 1
Scott, D. F, IV: 2
Scott, W. B. F, II: 1
Sedgwick, E. F, IV: 4
Sedgwick, H. D. F, IV: 4
Selekman, B. M. F, III: 3
Seymour, C. F, III: 4
Seznec, J. J. F, IV: 3
Shapley, H. F, I: 1
Shattuck, G. C. F, II: 4
Shattuck, H. L. F, III: 4
Shaw, H. S. F, III: 4
Shaw, Sir W. N. FHM, II: 1
Shear, T. L. F, IV: 2
Sherrill, H. K. F, IV: 1
Sherrill, M. S. F, I: 3
Sherrington, Sir C. S. FHM, II: 4
Shimer, H. W. F, II: 1
Sibelius, J. FHM, IV: 4
Sidgwick, N. V. FHM, I: 3
Simpson, S. P. F, III: 1
Sinnott, E. W. F, II: 2
Slater, J. C. F, I: 2
Slipher, V. M. F, I: 1
Slocum, F. F, I: 1
Smith, A. C. F, II: 2
Smith, D. S. F, IV: 4
Smith, G. M. F, II: 2
Smith, H. E. F, IV: 3
Smith, H. M. F, I: 3
Smith, L. B. F, I: 3
Smith, P. F, III: 4
Smith, Sir W. W. FHM, II: 2
Snyder, C. F, III: 3
Snyder, V. F, I: 1
Soderberg, R. C. F, I: 4
Sollmann, T. H. F, II: 4
Sorokin, P. A. F, III: 3
Spaulding, F. T. F, III: 3
Sperry, W. L. F, IV: 1
Spinden, H. J. F, IV: 2
Spofford, C. M. F, I: 4
Sprague, O. M. W. F, III: 3
Stafford, R. H. F, IV: 1
Stakman, E. C. F, II: 2
Stammler, R. FHM, II: 1
Stearns, A. W. F, III: 4
Stebbins, J. F, I: 1
Steinmetz, S. R. FHM, III: 3
Stetson, H. T. F, I: 1
Stewart, G. W. F, I: 2
Stock, C. F, II: 1
Stockbarger, D. C. F, I: 2
Stodola, A. FHM, I: 4
Stone, H. F. F, III: 1
Stravinsky, I. FHM, IV: 4
Street, J. C. F, I: 2
Strong, R. P. F, II: 4
Struik, D. J. F, I: 1
Struve, O. F, I: 1
Struve, P. B. FHM, III: 3
Sverdrup, H. U. F, II: 1
Swan, T. W. F, III: 1
Takayanagi, K. FHM, III: 1
Talbot, F. B. F, II: 4
Tamarkin, J. D. F, I: 1
Tatlock, J. S. P. F, IV: 3
Taylor, C. H. F, IV: 2
Taylor, F. H. F, IV: 4
Taylor, H. S. F, I: 2
Teggart, F. J. F, III: 3
Terman, L. M. F, IV: 1
Terzaghi, K. F, I: 4
Thimann, K. V. F, II: 2
Thomas, F. W. FHM, IV: 3
Thomas, T. H. F, III: 2
Thomas, W. I. F, III: 3
Thompson, Sir D'A. W. FHM, II: 3
Thompson, M. deK. F, I: 2
Thompson, R. F, IV: 4
Thomson, W. F, IV: 3
Thorn, G. W. F, II: 4
Thorndike, E. L. F, IV: 1
Thurston, E. S. F, III: 1
Thurstone, L. L. F, IV: 1
Tolman, R. C. F, I: 3
Torrey, C. C. F, IV: 3
Tosdal, H. R. F, III: 3
Tozzer, A. M. F, IV: 2
Trelease, W. F, II: 2
Trevelyan, G. M. FHM, IV: 2
Tucker, D. S. F, III: 3
Turner, C. E. F, III: 4
Tyzzer, E. E. F, II: 4
Ulich, R. F, III: 3
Urey, H. C. F, I: 3
Usher, A. P. F, III: 3
Vallarta, M. S. F, I: 2
Vallée Poussin, C. J. de la. FHM, I: 1
Van de Graaff, R. J. F, I: 2
Van Hook, L. R. F, IV: 3
Van Vleck, J. H. F, I: 2
Vaughan, T. W. F, II: 1
Veblen, O. F, I: 1
Vecchio, G. Del. FHM, III: 1
Verhoeff, F. H. F, II: 4
Viëtor, K. F, IV: 4
Viets, H. R. F, IV: 2
Vincent, J. H. FHM, II: 4
Viner, J. F, III: 3
Wagner, K. W. FHM, I: 4
Walsh, J. L. F, I: 1
Wambaugh, S. F, III: 2
Warner, E. P. F, I: 4
Warren, B. E. F, I: 2
Warren, B. W. F, III: 1
Warren, C. H. F, II: 1
Washburn, H. B. F, IV: 1
Watson, J. B. F, IV: 1
Wearn, J. T. F, II: 4
Weatherby, C. A. F, II: 2
Webster, D. L. F, I: 2
Webster, E. S. F, III: 4
Weiser, H. B. F, I: 3
Wells, F. L. F, IV: 1
Westergaard, H. M. F, I: 4
Weston, G. B. F, IV: 3
Weston, K. E. F, IV: 4
Weston, W. H., Jr. F, II: 2
Wetmore, R. H. F, II: 2
Weyl, H. FHM, I: 1
Weysse, A. W. F, II: 3
Whipple, F. L. F, I: 1
White, P. D. F, II: 4
Whitehead, A. N. F, I: 1
Whitehead, T. N. F, III: 3
Whitlock, H. P. F, II: 1
Whitman, E. A. F, III: 1
Whitmore, F. C. F, I: 3
Whitney, W. R. F, I: 3
Whittlesey, D. S. F, II: 1

Widder, D. V. F, I: 1
Wieland, H. FHM, I: 3
Wild, P. S., Jr. F, III: 2
Wilkins, E. H. F, IV: 3
Williams, J. H. F, III: 3
Williams, R. S. F, I: 3
Willis, B. F, II: 1
Willits, J. H. F, III: 3
Willoughby, W. F. F, III: 2
Willoughby, W. W. F, III: 2
Wilson, C. E. F, III: 4
Wilson, E. B. F, I: 2
Wilson, E. B., Jr. F, I: 3
Wilson, G. G. F, III: 2
Winlock, H. E. F, IV: 4
Winship, L. L. F, III: 4
Wislocki, G. B. F, II: 3
Wissler, C. F, IV: 2
Wolbach, S. B. F, II: 4
Wolfson, H. A. F, IV: 3
Wolman, L. F, III: 3
Wood, R. W. F, I: 2
Woodworth, R. S. F, IV: 1
Worrell, W. H. F, IV: 3
Wright, Lord. FHM, III: 1
Wright, C. H. C. F, IV: 4
Wright, F. E. F, II: 1
Wright, Q. F, III: 2
Wu, J. C. H. FHM, III: 1
Wulff, J. F, I: 4
Wyman, J., Jr. F, II: 3
Wyzanski, C. E., Jr. F, III: 1
Yeomans, H. A. F, III: 2
Yerkes, R. M. F, IV: 1
Young, B. L. F, III: 4
Young, O. D. F, III: 4
Young, R. C. F, I: 3
Zeleny, J. F, I: 2
Zimmerman, C. C. F, III: 3
Zworykin, V. K. F, I: 4

STATUTES AND STANDING VOTES.

STATUTES.

Adopted November 8, 1911: *amended May* 8, 1912, *January* 8, *and May* 14, 1913, *April* 14, 1915, *April* 12, 1916, *April* 10, 1918, *May* 14, 1919, *February* 8, *April* 12, *and December* 13, 1922, *February* 14, *March* 14, *and October* 10, 1923, *March* 10, 1926, *May* 9, 1928, *April* 8 *and November* 11, 1931, *April* 12, 1933, *February* 14, 1934, *December* 14, 1938, *January* 11, *April* 12, 1939, *May* 8, 1940, *May* 14, 1941, *November* 18, 1942, *and January* 12, 1944.

CHAPTER I.

The Corporate Seal.

Article 1. The Corporate Seal of the Academy shall be as here depicted:

Article 2. The Recording Secretary shall have the custody of the Corporate Seal.

See Chap. v, art. 3; chap. vi, art. 2.

CHAPTER II.

Fellows and Foreign Honorary Members and Dues.

Article 1. The Academy shall consist of Fellows, elected from the citizens or residents of the United States of America, Fellows Emeriti, and Foreign Honorary Members. They are arranged in four Classes, according to the Arts and Sciences in which they are severally proficient, and each Class shall be divided into four Sections, namely:

Class I. *The Mathematical and Physical Sciences*

Section 1. Mathematics and Astronomy
Section 2. Physics
Section 3. Chemistry
Section 4. Technology and Engineering

Class II. *The Natural and Physiological Sciences*

Section 1. Geology, Mineralogy, and Physics of the Globe
Section 2. Botany
Section 3. Zoölogy and Physiology
Section 4. Medicine and Surgery

Class III. *The Social Arts*

Section 1. Jurisprudence
Section 2. Government, International Law, and Diplomacy
Section 3. Economics and Sociology
Section 4. Administration and Affairs

Class IV. *The Humanities*

Section 1. Theology, Philosophy, and Psychology
Section 2. History, Archæology, and Anthropology
Section 3. Philology
Section 4. The Fine Arts and Belles Lettres

Article 2. The number of Fellows shall not exceed Eight hundred, of whom not more than Six hundred shall be residents of Massachusetts, nor shall there be more than Two hundred and twenty in any one Class.

Fellows of the Academy on retiring from their academic or other regular duties may, if they so desire and with the approval of the Council, be

transferred to the status of Fellows Emeriti. Fellows Emeriti shall be exempt from the payment of dues and may not hold office in the Academy, but shall have all the other privileges of Fellowship. In the published lists of the membership of the Academy, Fellows Emeriti shall be separately classified, and shall be outside the statutory limit set on the number of Fellows.

ARTICLE 3. The number of Foreign Honorary Members shall not exceed One hundred and thirty. They shall be chosen from among citizens of foreign countries most eminent for their discoveries and attainments in any of the Classes above enumerated. There shall not be more than Thirty-five in any one Class.

ARTICLE 4. If any person, after being notified of his election as Fellow, shall neglect for six months to accept in writing, or, if a Fellow resident within fifty miles of Boston shall neglect to pay his Admission Fee, his election shall be void; and if any Fellow resident within fifty miles of Boston shall neglect to pay his Annual Dues for six months after they are due, provided his attention shall have been called to this Article of the Statutes in the meantime, he shall cease to be a Fellow; but the Council may suspend the provisions of this Article for a reasonable time.

With the previous consent of the Council, the Treasurer may dispense (*sub silentio*) with the payment of the Admission Fee or of the Annual Dues or both whenever he shall deem it advisable. In the case of officers of the Army or Navy who are out of the Commonwealth on duty, payment of the Annual Dues may be waived during such absence if continued during the whole financial year and if notification of such expected absence be sent to the Treasurer. Upon similar notification to the Treasurer, similar exemption may be accorded to Fellows subject to Annual Dues, who may temporarily remove their residence for at least two years to a place more than fifty miles from Boston.

If any person elected a Foreign Honorary Member shall neglect for six months after being notified of his election to accept in writing, his election shall be void.

See Chap. vii, art. 2.

ARTICLE 5. Every Fellow resident within fifty miles of Boston hereafter elected shall pay an Admission Fee of Ten dollars, unless previously as an Associate he has paid an Admission Fee of like amount.

Every Fellow resident within fifty miles of Boston shall, and others may, pay such Annual Dues, not exceeding Fifteen dollars, as shall be voted by the Academy at each Annual Meeting, when they shall become due; but any Fellow shall be exempt from the annual payment if, at any time after his admission, he shall pay into the treasury Two hundred dollars in addition to his previous payments. Any Fellow shall also be exempt from Annual Dues who has paid such dues for forty years, or, having attained the age of seventy-five has paid dues for twenty-five years.

Fellows residing more than fifty miles from Boston elected after 1938 shall, and other non-resident Fellows may, pay annual dues of five dollars, which shall entitle them to all privileges of resident Fellows.

All Commutations of the Annual Dues shall be and remain permanently funded, the interest only to be used for current expenses.

Any Fellow not previously subject to Annual Dues who takes up his residence within fifty miles of Boston, shall pay to the treasurer within three months thereafter Annual Dues for the current year, failing which his Fellowship shall cease; but the Council may suspend the provisions of this Article for a reasonable time.

Only Fellows who pay Annual Dues or have commuted them may hold office in the Academy or serve on the Standing Committees or vote at meetings.

ARTICLE 6. Fellows who pay or have commuted the Annual Dues and Foreign Honorary Members shall be entitled to receive gratis one copy of all numbers of the Proceedings and Memoirs of the Academy which have been issued after their election.

See Chap. xi, art. 2.

ARTICLE 7. Diplomas signed by the President and the Vice-President of the Class to which the member belongs, and countersigned by the

Secretaries, shall be given to Foreign Honorary Members and to Fellows.

ARTICLE 8. If, in the opinion of a majority of the entire Council, any Fellow or Foreign Honorary Member shall have rendered himself unworthy of a place in the Academy, the Council shall recommend to the Academy the termination of his membership; and if three-fourths of the Fellows present, out of a total attendance of not less than fifty at a Stated Meeting, or at a Special Meeting called for the purpose, shall adopt this recommendation, his name shall be stricken from the Roll.

See Chap. iii; chap. vi, art. 1; chap. x, art. 1; chap. xi, art. 2.

CHAPTER III.

ELECTION OF FELLOWS AND FOREIGN HONORARY MEMBERS.

The procedure in the election of Fellows and Foreign Honorary Members shall be as follows:

Nominations to Fellowship or Foreign Honorary Membership in any section must be signed by two Fellows of that Section, or by three Fellows of any Section, and sent to the Corresponding Secretary accompanied by a statement of the qualifications of the nominee and brief biographical data.

Notice shall be sent to every Fellow not later than the fifteenth of January in each year, reminding him that all nominations must be in the hands of the Corresponding Secretary before the first of February following.

The Corresponding Secretary shall, on the second of February, transmit to the several Vice-Presidents the nominations for Fellows and Foreign Honorary Members in their respective classes. Each Class Committee shall, before the sixteenth of February, consider the nominations, and may add others for the purpose of securing proper membership in the Academy, to the end that those in the country of highest distinction in their several classes may be Fellows.

A list of the nominees, giving a brief account of each, with the names of the nominators, shall be sent to every Fellow with a request that he return the list with such confidential comments and indications of preference as he may choose to make.

All the nominations, with any comments thereon and with expressions of preference on the part of the Fellows, shall be referred to the appropriate Class Committees, which shall canvass them, and report their recommendations in writing to the Council before the Stated Meeting of the Academy in April.

Elections of Fellows and Foreign Honorary Members shall be made by the Council before the Annual Meeting in May, and announced at that meeting.

Persons nominated in any year, but not elected, may be carried over to the list of nominees for the next year at the discretion of the Council, but shall not be further continued unless renominated.

See Chap. ii; chap. vi, art. 1; chap. x, art. 1.

CHAPTER IV.

OFFICERS.

ARTICLE 1. The Officers of the Academy shall be a President (who shall be Chairman of the Council), four Vice-Presidents (one from each Class), a Corresponding Secretary (who shall be Secretary of the Council), a Recording Secretary, a Treasurer, a Librarian, and an Editor, all of whom shall be elected by ballot at the Annual Meeting, and shall hold their respective offices for one year, and until others are duly chosen and installed.

There shall be also sixteen Councillors, one from each Section of each Class. At each Annual Meeting four Councillors, one from each Class, shall be elected by ballot to serve for the full term of four years and until others are duly chosen and installed. The same Fellows shall not be eligible for two successive terms.

The Councillors, with the officers previously named, and the Chairmen of the House Committee and the Committee on Resources and Policy, *ex officiis*, shall constitute the Council.

See Chap. xi, art. 1.

ARTICLE 2. If any officer be unable, through death, absence, or disability, to fulfill the duties of his office, or if he shall resign, his place may be

filled by the Council in its discretion for any part or the whole of the unexpired term.

ARTICLE 3. At the Stated Meeting in March, the President shall appoint a Nominating Committee of four Fellows having the right to vote, one from each Class. This Committee shall prepare a list of nominees for the several offices to be filled, and for the Standing Committees, and file it with the Recording Secretary not later than four weeks before the Annual Meeting.

See Chap. vi, art. 2.

ARTICLE 4. Independent nominations for any office, if signed by at least twenty Fellows having the right to vote, and received by the Recording Secretary not less than ten days before the Annual Meeting, shall be inserted in the call therefor, and shall be mailed to all the Fellows having the right to vote.

See Chap. vi, art. 2.

ARTICLE 5. The Recording Secretary shall prepare for use in voting at the Annual Meeting a ballot containing the names of all persons duly nominated for office.

CHAPTER V.

THE PRESIDENT.

ARTICLE 1. The President, or in his absence the senior Vice-President present (seniority to be determined by length of continuous Fellowship in the Academy), shall preside at all meetings of the Academy. In the absence of all these officers, a Chairman of the meeting shall be chosen by ballot.

ARTICLE 2. Unless otherwise ordered, all Committees which are not elected by ballot shall be appointed by the presiding officer.

ARTICLE 3. Any deed or writing to which the Corporate Seal is to be affixed, except leases of real estate, shall be executed in the name of the Academy by the President or, in the event of his death, absence, or inability, by one of the Vice-Presidents, when thereto duly authorized.

See Chap. ii, art. 7; chap. iv, art. 1, 3; chap. vi, art. 2; chap. vii, art. 1; chap. x, art. 6; chap. xi, art. 1, 2; chap. xii, art. 1.

CHAPTER VI.

THE SECRETARIES.

ARTICLE 1. The Corresponding Secretary shall conduct the correspondence of the Academy and of the Council, recording or making an entry of all letters written in its name, and preserving for the files all official papers which may be received. At each meeting of the Council he shall present the communications addressed to the Academy which have been received since the previous meeting, and at the next meeting of the Academy he shall present such as the Council may determine.

He shall notify all persons who may be elected Fellows or Foreign Honorary Members, send to each a copy of the Statutes, and on their acceptance issue the proper Diploma. He shall also notify all meetings of the Council; and in case of the death, absence, or inability of the Recording Secretary he shall notify all meeting of the Academy.

Under the direction of the Council, he shall keep a List of the Fellows and Foreign Honorary Members, arranged in their several Classes and Sections. It shall be printed annually and issued as of the first day of July.

See Chap. ii, art. 7; chap. iii; chap. iv, art. 1; chap. x, art. 6; chap. xi, art. 1; chap. xii, art. 1.

ARTICLE 2. The Recording Secretary shall have the custody of the Charter, Corporate Seal, Archives, Statute-Book, Journals, and all litersry papers belonging to the Academy.

Fellows borrowing such papers or documents shall receipt for them to their custodian.

The Recording Secretary shall attend the meetings of the Academy and keep a faithful record of the proceedings with the names of the Fellows present; and after each meeting is duly opened, he shall read the record of the preceding meeting.

He shall notify the meetings of the Academy to each Fellow and by mail at least seven days beforehand, and in his discretion may also cause the meetings to be advertised; he shall apprise Officers and Committees of their election or appointment, and inform the Treasurer of appropriations of money voted by the Academy.

After all elections, he shall insert in the Records

the names of the Fellows by whom the successful nominees were proposed.

He shall send the Report of the Nominating Committee in print to every Fellow having the right to vote at least three weeks before the Annual Meeting.

See Chap. iv, art. 3.

In the absence of the President and of the Vice-President he shall, if present, call the meeting to order, and preside until a Chairman is chosen.

See Chap. i; chap. ii, art. 7; chap. iv, art. 3, 4, 5; chap. x, art. 6; chap. xi, art. 1, 2; chap. xii, art. 1, 3.

ARTICLE 3. The Secretaries, with the Editor, shall have authority to publish such of the records of the meetings of the Academy as may seem to them likely to promote its interests.

CHAPTER VII.

THE TREASURER AND THE TREASURY.

ARTICLE 1. The Treasurer shall collect all money due or payable to the Aacedmy and all gifts or bequests made to it. He shall pay all bills due and payable by the Academy when approved by the proper officers. He shall sign all leases of real estate in the name of the Academy. He shall be the official custodian of all bonds, stocks and other securities and, with the written approval of any one member of the Committee on Finance, he shall have full authority to sell and transfer, invest and reinvest from time to time in such manner and upon such terms as shall to him seem best, the whole or any part of the personal property of the said Academy.

He shall keep a faithful account of all receipts and expenditures, submit his accounts annually to the Auditing Committee, and render them at the expiration of his term of office, or whenever required to do so by the Academy or the Council.

He shall keep separate accounts of the income of the Rumford Fund, and of all other special Funds, and of the Appropriation thereof, and render them annually.

His accounts shall always be open to the inspection of the Council.

ARTICLE 2. He shall report annually to the Council at its March meeting on the expected income of the various Funds and from all other sources during the ensuing financial year. He shall also report the names of all Fellows who may be then delinquent in the payment of their Annual Dues.

ARTICLE 3. He shall give such security for the trust reposed in him as the Academy may require.

ARTICLE 4. With the approval of a majority of the Committee on Finance, he may appoint an Assistant Treasurer to perform his duties, for whose acts, as such assistant, he shall be responsible; or, with like approval and responsibility, he may employ any Trust Company doing business in Boston as his agent for the same purpose, the compensation of such Assistant Treasurer or agent to be fixed by the Committee on Finance and paid from the Funds of the Academy.

ARTICLE 5. At the Annual Meeting he shall report in print all his official doings for the preceding year, stating the amount and condition of all the property of the Academy entrusted to him, and the character of the investments.

ARTICLE 6. The Financial Year of the Academy shall begin with the first day of April.

ARTICLE 7. No person or committee shall incur any debt or liability in the name of the Academy, unless in accordance with a previous vote and appropriation therefor by the Academy or the Council, or sell or otherwise dispose of any property of the Academy, except cash or invested funds, without previous consent and approval of the Council.

See Chap. ii, art. 4, 5; chap. vi, art. 2; chap. x, art. 6; chap. xi, art. 1, 2, 3; chap. xii, art. 1.

CHAPTER VIII.

THE LIBRARIAN AND THE LIBRARY.

ARTICLE 1. The Librarian shall have charge of the printed books, keep a correct catalogue

thereof, and provide for their delivery from the Library.

At the Annual Meeting, as Chairman of the Committee on the Library, he shall make a Report on its condition.

ARTICLE 2. In conjunction with the Committee on the Library he shall have authority to expend such sums as may be appropriated by the Academy for the purchase of books, periodicals, etc., and for defraying other necessary expenses connected with the Library.

ARTICLE 3. All books procured from the income of the Rumford Fund or of other special Funds shall contain a book-plate expressing the fact.

ARTICLE 4. Books taken from the Library shall be receipted for to the Librarian or his assistant.

ARTICLE 5. Books shall be returned in good order, regard being had to necessary wear with good usage. If any book shall be lost or injured, the Fellow to whom it stands charged shall replace it by a new volume or by a new set, if it belongs to a set, or pay the current price thereof to the Librarian, whereupon the the remainder of the set, if any, shall be delivered to the Fellow so paying, unless such remainder be valuable by reason of association.

ARTICLE 6. All books shall be returned to the Library for examination at least one week before the Annual Meeting.

ARTICLE 7. The Librarian shall have the custody of the Publications of the Academy. With the advice and consent of the President, he may effect exchanges with other associations.

See Chap. ii, art. 6; chap. xi, art. 1, 2.

CHAPTER IX.

THE EDITOR AND THE PUBLICATIONS.

ARTICLE 1. The Editor shall have charge of the conduct through the press of the Proceedings and the Memoirs, and all correspondence relative thereto, and shall have power to fix the price at which individual numbers of the Proceedings and Memoirs are sold.

The Editor shall select as Assocaite Editor one member of the Committee of Publication, and the Associate Editor shall assist the Editor in the duties of his office in such way as the two shall find most convenient.

ARTICLE 2. In conjunction with the Committee of Publication, the Editor shall have authority to expend such sums as may be appropriated by the Academy for printing the publications and for defraying other expenses therewith connected.

ARTICLE 3. All publications which are financed in whole or in part from the income of the Rumford Fund or from the income of other special funds, and all publications of work done with the aid of the Rumford Fund or other special funds, shall contair a conspicuous statement of this fact.

ARTICLE 4. Two hundred extra copies of each paper printed in the Proceedings or Memoirs shall be placed at the disposal of the author without charge.

If, on account of the number of communications offered for publication, it shall be necessary to decline for publication communications otherwise acceptable, members of the Academy shall be given preference in each of the several Classes over non-members; but whenever it shall be necessary to exercise this preference, the Editor shall inform the Council of the fact.

See Chap. iv, art. 1; chap. vi, art. 3; chap. x, art. 6; chap. xi, art. 2, sect. 5.

CHAPTER X.

THE COUNCIL.

ARTICLE 1. The Council shall exercise a discreet supervision over all nominations and elections to membership, and in general supervise all the affairs of the Academy not explicitly reserved to the Academy as a whole or entrusted by it or by the Statutes to standing or special committees.

It shall consider all nominations duly sent to it by any Class Committee, and act upon them in accordance with the provisions of Chapter III.

With the consent of the Fellow interested, it shall have power to make transfers between the several Sections, reporting its action to the Academy.

See Chap. iii; chap. xi, art. 1.

ARTICLE 2. Nine members shall constitute a quorum.

ARTICLE 3. It shall establish rules and regulations for the transaction of its business, and provide all printed and engraved blanks and books of record.

ARTICLE 4. It shall act upon all resignations of officers, and all resignations and forfeitures of Fellowship; and cause the Statutes to be faithfully executed.

It shall appoint all agents and subordinates not otherwise provided for by the Statutes, prescribe their duties, and fix their compensation. They shall hold their respective positions during the pleasure of the Council.

ARTICLE 5. It may appoint, for terms not exceeding one year, and prescribe the functions of, such committees of its number, or of the Fellows of the Academy, as it may deem expedient, to facilitate the administration of the affairs of the Academy or to promote its interests.

ARTICLE 6. At its March meeting it shall receive reports from the President, the Secretaries, the Treasurer, and the Standing Committees, on the appropriations severally needed for the ensuing financial year. At the same meeting the Treasurer shall report on the expected income of the various Funds and from all other sources during the same year.

A report from the Council shall be submitted to the Academy, for action, at the March meeting, recommending the appropriation which in the opinion of the Council should be made.

On the recommendation of the Council, special appropriations may be made at any Stated Meeting of the Aacdemy, or at a Special Meeting called for the purpose.

See Chap. xi, art. 3.

ARTICLE 7. It shall report at every meeting of the Academy such business as it may deem advisable to present.

See Chap. ii, art. 4, 5, 8; chap. iv, art. 1, 2; chap. vi, art. 1; chap. vii, art. 1; chap. xii, art. 1, 4.

CHAPTER XI.

STANDING COMMITTEES.

ARTICLE 1. The Class Committee of each Class shall consist of the Vice-President, who shall be chairman, and the four Councillors of the Class, together with such other officer or officers annually elected as may belong to the Class. It shall consider nominations to Fellowship in its own Class, and report in writing to the Council such as may receive at a Class Committee Meeting a majority of the votes cast, provided at least three shall have been in the affirmative.

See Chap. iii.

ARTICLE 2. At the Annual Meeting the following Standing Committees shall be elected by ballot to serve for the ensuing year.

(i) *The Committee on Finance*, to consist of four Fellows, who shall have general oversight of the funds and investments of the Academy.

See Chap. iv, art. 3; chap. vii, art. 1, 4; chap. x, art. 6.

(ii) *The Committee on Policy and Resources* to consist of five Fellows and the President, *ex officio*, one of the five elected members to be elected each year to serve for a term of five years, except that the five elected in 1939 shall be elected for terms of one, two, three, four, and five years respectively, the Committee to concern itself with procuring funds for the Academy, to study the activities and needs of the Academy, and to recommend, for the approval of the Council, means by which the functions and purposes of the Academy may best be fulfilled.

(iii) *The Rumford Committee*, to consist of seven Fellows, who shall report to the Academy on all applications and claims for the Rumford Premium. It alone shall authorize the purchase of books, publications and apparatus at the

charge of the income from the Rumford Fund, and generally shall see to the proper execution of the trust.

See Chap. iv, art. 3; chap. x, art. 6.

(iv) *The Cyrus Moors Warren Committee*, to consist of seven Fellows, who shall consider all applications for appropriations from the income of the Cyrus Moors Warren Fund, and generally shall see to the proper execution of the trust.

See Chap. iv, art. 3; chap. x, art. 6.

(v) *The Committee of Publication*, to consist of the Editor, *ex officio*, as Chairman, and four other Fellows, one from each Class, to whom all communications submitted to the Academy for publication shall be referred, and to whom the printing of the Proceedings and the Memoirs shall be entrusted.

It shall fix the price at which volumes of the publications shall be sold, but Fellows may be supplied at half price with volumes and with single publications which they are not entitled to receive gratis.

It shall determine when the pressure of material offered for publication makes it necessary to give preference to members of the Academy as compared with non-members, or to give priority to certain members as compared with others, and to what extent this preference or priority shall be applied in each of the four Classes, to the end that a proper balance of the facilities of publication with respect to subject matter and authors may be maintained.

See Chap. iv, art. 3; chap. vi, art. 1, 3; chap. ix; chap. x, art. 6.

(vi) *The Committee on the Library*, to consist of the Librarian, *ex officio*, as Chairman, and four other Fellows, one from each Class, who shall examine the Library and make an annual report on its condition and management.

See Chap. iv, art. 3; chap. viii, art. 1, 2; chap. x, art. 6.

(vii) *The House Committee*, to consist of four Fellows, who shall have charge of all expenses connected with the House, including the general expenses of the Academy not specifically assigned to the care of other Committees or Officers.

See Chap. iv, art. 1, 3; chap. x, art. 6.

(viii) *The Committee on Meetings*, to consist of the President, the Recording Secretary, and four other Fellows, who shall have charge of plans for meetings of the Academy.

See Chap. iv, art. 3; chap. x, art. 6.

(ix) *The Auditing Committee*, to consist of two Fellows, who shall audit the accounts of the Treasurer, with power to employ an expert and to approve his bill.

See Chap. iv, art. 3; chap. vii, art. 1; chap. x, art. 6.

(x) *The Committee on Biographical Notices*, to consist of six Fellows, two to be elected each year, one of them to be a Secretary of the Academy, to see that biographical records of the Fellows and Foreign Honorary Members are provided.

ARTICLE 3. The Standing Committees shall report annually to the Council in March on the appropriations severally needed for the ensuing financial year; and all bills incurred on account of these Committees, within the limits of the several appropriations made by the Academy, shall be approved by their respective Chairmen.

In the absence of the Chairman of any Committee, bills may be approved by any member of the Committee whom he shall designate for the purpose.

See Chap. vii, art. 1, 7; chap. x. art. 6.

CHAPTER XII.

MEETINGS, COMMUNICATIONS, AND AMENDMENTS.

ARTICLE 1. There shall be annually eight Stated Meetings of the Academy, namely, on the second Wednesday of October, November, December, January, February, March, April, and May. Only at these meetings, or at adjournments thereof regularly notified, or at Special Meetings called for the purpose, shall appropriations of money be made or amend-

ments of the Statutes or Standing Votes be effected.

The Stated Meeting in May shall be the Annual Meeting of the Corporation.

Special Meetings shall be called by either of the Secretaries at the request of the President, of a Vice-President, of the Council, or of ten Fellows having the right to vote; and notifications thereof shall state the purpose for which the meeting is called.

The Council shall have authority, as occasion may demand, to arrange additional meetings and to cancel any of the Statutory meetings, except that meetings for transacting business shall be held as required by the Statutes.

ARTICLE 2. Twenty-five Fellows having the right to vote shall constitute a quorum for the transaction of business at Stated or Special Meetings. Eighteen Fellows shall be sufficient to constitute a meeting for literary or scientific communications and discussions.

ARTICLE 3. Upon the request of the presiding officer or the Recording Secretary, any motion or resolution offered at any meeting shall be submitted in writing.

ARTICLE 4. No report of any paper presented at a meeting of the Academy shall be published by any Fellow without the consent of the author; and no report shall in any case be published by any Fellow in a newspaper as an account of the proceedings of the Academy without the previous consent and approval of the Council. The Council, in its discretion, by a duly recorded vote, may delegate its authority in this regard to one or more of its members.

ARTICLE 5. Fellows may introduce guests at any of the literary or scientific meetings of the Academy.

ARTICLE 6. The Academy shall not express its judgment on literary or scientific memoirs or performances submitted to it, or included in its Publications.

ARTICLE 7. All proposed Amendments of the Statutes shall be referred to a committee, and on its report, at a subsequent Stated Meeting or at a Special Meeting called for the purpose, two-thirds of the ballots cast, and not less than twenty-five, must be affirmative to effect enactment.

ARTICLE 8. Standing Votes may be passed, amended, or rescinded at a Stated Meeting, or at a Special Meeting called for the purpose, by a vote of two-thirds of the members present. They may be suspended by a unanimous vote.

See Chap. ii, art. 5, 8; chap. iii; chap. iv, art. 3, 4, 5; chap. v, art. 1; chap. vi, art. 1, 2; chap. x. art 7.

STANDING VOTES

1. Communications of which notice has been given to either of the Secretaries shall take precedence of those not so notified.

2. Fellows may take from the Library six volumes at any one time, and may retain them for three months, and no longer. Upon special application, and for adequate reasons assigned, the Librarian may permit a larger number of volumes, not exceeding twelve, to be drawn from the Library for a limited period.

3. Works published in numbers, when unbound, shall not be taken from the Hall of the Academy without the leave of the Librarian.

4. Communications offered for publication in the Proceedings or Memoirs of the Academy shall not be accepted for publication before the author either himself or through some agent, shall have informed the Committee on Meetings of his readiness to use such time as the Committee may assign him at such meeting as may be convenient both to him and to the Committee, for the purpose of presenting to the Academy a general statement of the nature and significance of the results contained in his communication.

RUMFORD PREMIUM

In conformity with the terms of the gift of Sir Benjamin Thompson, Count Rumford, of a certain Fund to the American Academy of Arts and Sciences, and with a decree of the Supreme Judicial Court of Massachusetts for carrying into effect the general charitable intent and purpose of Count Rumford, as expressed in his letter of gift, the Academy is empowered to make from the income of the Rumford Fund, as it now exists, at any Annual Meeting, an award of a gold and a silver medal, being together of the intrinsic value of three hundred dollars, as a Premium to the author of any important discovery or useful improvement in light or heat, which shall have been made and published by printing, or in any way made known to the public, in any part of the continent of America, or any of the American islands; preference always being given to such discoveries as, in the opinion of the Academy, shall tend most to promote the good of mankind; and, if the Academy sees fit, to add to such medals, as a further Premium for such discovery and improvement, a sum of money not exceeding three hundred dollars.

PERMANENT SCIENCE FUND

By an Agreement and Declaration of Trust dated Sept. 5, 1928, the BOSTON SAFE DEPOSIT AND TRUST COMPANY agrees to accept and hold gifts made to it as Trustee of the PERMANENT SCIENCE FUND . . . and to pay the income . . . to the AMERICAN ACADEMY OF ARTS AND SCIENCES, to be applied to such scientific research "as shall be deemed charitable within the broadest possible construction of that term" . . . in such sciences as Mathematics, Physics, Chemistry, Astronomy, Geology, Geography, Zoology, Botany, Anthropology, Psychology, Sociology and Economy, History and Philology, Engineering, Medicine and Surgery, Agriculture, Manufacture and Commerce, Education and any other science of any nature or description whether or not now known or now recognized as scientific; and may be applied to or through public or private associations, societies or institutions, . . . or to or through one or more individuals.

Disbursements from income are voted by the Council of the Academy upon recommendations from the Committee on the Permanent Science Fund. A brochure comprising the First Decennial Report on the history and activities of this committee and a copy of the Agreement and Declaration of Trust is available on request to the Trustee at 100 Franklin Street, Boston, Mass.